JULY 4, 1936

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. I., OF VOL. II., 1936. LONDON, SATURDAY, JULY 4, 1936. Pp. 128—Price 1s.
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ADDRESSES AND ORIGINAL ARTICLES

INDUSTRIAL PULMONARY DISEASE DUE TO THE INHALATION OF DUST

WITH SPECIAL REFERENCE TO SILICOSIS*

BY E. L. MIDDLETON, M.D. Edin., D.P.H.
H.M. MEDICAL INSPECTOR OF FACTORIES

THE aim in these lectures is to reach some conclusions regarding the ætiology of silicosis from a study of the occupations in which it occurs. In order to save confusion as to the condition to which the term silicosis is applied, the typical form of the disease is briefly described. The spread of the disease over the industries in this country is referred to and some of the occupations are more closely studied. It will be found that in all these occupations in which silicosis occurred there had been exposure to the inhalation of dust of free silica.

Besides the industries in which silicosis occurs, certain occupations are referred to in which the workers are exposed to dust of silicates without free silica, and the changes following such exposure are described. These form a contrast with the characteristics of silicosis and, in general, they conform to the description of a condition which has been called "silicatosis."

Silicosis

Silicosis is the most important of that group of diseases which have been termed collectively the pneumoconioses. In this country it is always the result of prolonged exposure to certain kinds of dust in the course of occupation. The onset of symptoms is marked by dyspnœa. Slight at first, noticeable only after prolonged or unusual exertion, it remains the most important symptom and is progressive throughout the course of the disease. In the early stage physical signs are characteristic, but they must be sought for with care. In this first stage the radiograph shows the presence of discrete shadows indicative of nodulation. In the second stage dyspnœa and cough become established and greater changes are noted in the physical signs. The radiograph shows the whole of both lung fields occupied by shadows indicative of nodulation, and there is some coalescence to form more or less dense opacities. There is always some degree of impairment of working capacity. The third stage is reached with total incapacity, through increasing severity of symptoms of which dyspnœa is the most distressing. The radiograph indicates areas of massive consolidation. Pulmonary tuberculosis may be present in any stage of silicosis. It may alter the symptoms, physical signs, radiological appearances, and the whole course of the disease. It is the most frequent accompaniment of silicosis.

Post-mortem appearances.—In fatal cases of uncomplicated silicosis the lungs are generally large, of increased density, and retain their shape on removal from the chest. Pleural adhesions are nearly always present and may be extensive and of long standing. On parts of the lung not covered by adhesions the pleura is typically mottled a grey colour and studied over with whitish mammillated nodules, each of which can be felt above the general surface and to be part of a nodule which extends into the lung.

The cut surface of the lung shows excess of pigmentation throughout its extent, but the striking and distinctive feature is the presence of numerous rounded nodules. These are dense, tough, or hard, and the cut surface is grey or black. Each nodule is from 2 to 5 mm. in diameter, but several may be aggregated together to form large composite nodules, or many may be united in a massive fibrosis. In old-standing cases individual nodules may be sharply defined from the surrounding lung tissue, which may show emphysema. The centre of the nodule may have undergone calcareous change. In fatal cases, where exposure to dust has been intense and the course of the disease relatively rapid, the nodules may be so crowded that practically no lung tissue can be seen remaining. This condition is found in some sand-blasters and it appears to follow exposure to highly siliceous dust—i.e., dust containing a very high proportion of free silica.

Gardner [1] described the pathological changes of the lungs in 15 cases of so-called "acute" silicosis. There were masses of small nodules embedded in broad sheets of fibrous tissue, a generalised fibrous thickening of the alveolar walls, and slight involvement of the glands.

The distribution of the fibrosis is not always uniform and discrete, but in certain cases it is condensed in large masses, of rounded or oval shape situated centrally or peripherally in the lung and usually about the middle zones, but the masses may be multiple. This form of distribution is met with typically amongst coal-miners and is described by observers in France and Belgium, as well as in this country.[2 3]

The diagnosis of silicosis is made post mortem on the macroscopic evidence of nodules which are palpable. The fibrous nodule is the essential and characteristic lesion of simple silicosis. Recourse to histological examination is usually necessary for diagnosis only in the presence of complications—notably tuberculosis and malignant disease. The presence of tuberculosis may render the diagnosis very difficult. According to Kettle [4] the differential diagnosis depends on the amount and distribution of the collagen in the tissue reaction; it is a matter of degree and there are no definite standards on which to base an opinion. Policard and Morel [4a] applied a spectrographic method for the detection of mineral particles in pulmonary tissues, and Irwin [4b] has developed a method for the demonstration of siliceous material in histological sections, as an aid to diagnosis, by incineration and treatment with acid.

Clinical and radiological examinations at earlier stages in the progress of the disease can be of immense importance in the diagnosis of complicated cases. Changes in the lymphatic glands usually occur early in the course of silicosis. At first enlarged, they are found in more advanced cases hard and on section dark grey or black, often showing several concentrically arranged systems of nodular fibrosis. The lymphatic glands may show foci of tuberculosis when tuberculous lesions are not apparent in extensively silicotic lungs.

Examination of the Dust-cloud

The International Conference on Silicosis held at Johannesburg in 1930 [5] adopted the view that in order to produce the pathological condition known

* The Milroy lectures for 1936 delivered before the Royal College of Physicians of London on Feb. 27th and March 3rd. The second lecture will appear in the next issue of THE LANCET.

as silicosis, silica must reach the lungs: (*a*) in a chemically uncombined condition, although it might be mixed with other dusts; (*b*) in fine particles of the order of less than 10 microns in diameter; (*c*) in sufficient amount, and over a certain period of time. It is generally agreed that the majority of dust particles found in the lungs are under 5μ and very few exceed 10μ. There are exceptions, for example, in the asbestos industry and in coal-mining, where the length of some particles found in the lungs may greatly exceed 10μ.

Special methods are required for determining the concentration, particle-size distribution, and composition of the dust-clouds to which workers are exposed. For the *numerical method* of dust estimation it is necessary to collect the sample in such a way that it can be examined under a high power of the microscope and the particles counted, measured, and their size-distribution ascertained.

The instruments used for this purpose are of two kinds. With one the sample is taken in a fraction of a second; with the other, the process of sampling can be run for over an hour or more. To the first class belongs the original konimeter introduced by Sir Robert Kotzé in 1916 and used as the standard instrument in the South African gold-mines.[6] The Owens Jet Dust-Counter, which also takes momentary samples, was designed by Dr. J. S. Owens,[7] and has been used in this country for estimating industrial dust-clouds since 1922.[8]

The Greenburg-Smith Impinger dust sampling apparatus was first described by Greenburg and Smith in 1922.[9] The standard instrument as now used in the United States Public Health Service was described by Greenburg and Bloomfield in 1932.[10]

The latest method of collecting samples of atmospheric dust for enumeration is by means of the Thermal Precipitator. This instrument was originally developed by Prof. R. Whytlaw-Gray and Dr. Lomax at Leeds and has been adapted by Green and Watson for estimating industrial dust-clouds as a result of work undertaken for the Medical Research Council.[11] The results of the counts obtained by the numerical method are usually expressed as the number of particles in 1 c.cm. of air. In America they are stated as millions of particles in a cubic foot of air. (One million particles in a cubic foot is approximately equivalent to 35 particles in 1 c.cm.) Dust-counts recorded in these lectures are of samples taken at breathing level and are stated as a number indicating particles in 1 c.cm. and, in parentheses, the approximately equivalent number of millions of particles in a cubic foot, thus: wet, hand grinding table-blades, 280 (8). To save the time of counting a comparative method of quantitation may be used.[12]

By the *gravimetric method* the sample of dust is collected from a large volume of air and is then weighed and the result expressed as the weight of dust in a given volume—e.g., mg. per cubic metre. When used alone the method is open to the criticism that particles of large size are included, which, though they have no pathological importance since they cannot reach the alveoli, yet represent a very high proportion of the weight of the sample. It is useful, however, to combine the numerical and gravimetric methods, especially in initial surveys.

The identification of mineral particles of dust is possible by means of the petrological microscope, but even under favourable conditions it is not possible to identify minerals below about 2 microns in size. This is important from the pathological aspect, for it is just below 2μ that the average size of all mineral particles found in the lungs lies, and the majority, over 80 per cent., of particles in an average industrial dust cloud, are under 2μ in diameter. Chemical analysis may be of value, but it does not give all the information necessary for assessing the pathogenic importance of a sample of dust, because the chemical composition may be less important than the mineralogical character.

A method for employing X ray diffraction for analysis has been introduced.[13]

The Occurrence of Silicosis

Silicosis is not reportable as are certain other occupational diseases, and, until a few years ago, the term had rarely been used for the purpose of certifying the cause of death.

Since the beginning of 1930, by arrangement with the Registrar-General, the Home Office have obtained copies of the certificates of all deaths due to fibrosis of the lungs, silicosis, asbestosis, or pulmonary disease due to dust. It is thus possible, for the first time, to present these data and for the present purpose the five-year period 1930 to 1934 has been taken.

The number of deaths included in the group during the period is 4038. Of these, silicosis was mentioned on the certificate as a cause of death in 1521 cases. The distribution by industries is shown in Table I.

TABLE I.—*Deaths from Silicosis (England and Wales)*

—	Industry.	1930	1931	1932	1933	1934	Total.
1	Sandblasting	10	17	5	10	3	45
2	Steel dressing and cleaning of castings	1	4	1	1	..	7
3	Flint and pebble crushing	1	1	2	4	1	9
4	Refractories industries	11	19	5	7	9	51
5	Scouring powders and abrasive soaps	..	1	3	..	1	5
6	Enamel maker	..	..	..	..	1	1
7	Metal grinding	35	37	31	21	18	142
8	Glaziers' diamond cutter	..	..	..	..	1	1
9	Sandstone quarrying and dressing	17	25	13	29	33	117
10	Sandstone masons	35	48	44	75	53	255
11	Grave diggers	1	..	..	..	2	3
12	Tunnel mining (sewage works)	..	1	..	3	1	5
13	Granite quarrying and dressing	2	1	..	3	..	6
14	Slate quarrying and dressing	1	2	5	3	3	14
15	Slate dressing, with sand	..	..	1	..	..	1
16	Gold mining (South Africa)	24	28	16	18	18	104
17	Tin mining	10	18	28	17	18	91
18	Lead mining	2	4	6	1	..	13
19	Copper mining	..	2	1	..	..	3
20	Iron ore (hæmatite) mining	..	10	7	6	13	36
21	Barytes mining	..	1	..	1	1	3
22	Fluorspar mining	..	1	..	..	..	1
23	Mining engineers	2	2	1	2	1	8
24	Diamond mine manager	..	..	..	..	1	1
25	Coal mining	41	50	76	74	85	326
26	Fireclay mining	..	..	..	1	..	1
27	Pottery, manufacture of	53	57	63	53	44	270
28	Leather dressing	1	..	..	..	..	1
29	Metallurgist	..	1	..	..	..	1
	Total silicosis	247	330	308	329	307	1521

It is not claimed that these figures represent, accurately, the occurrence of silicosis. They are almost certainly an understatement.

Occupations in which Silicosis Occurs

It will be convenient in reviewing some of these occupations to pay special attention to the materials and the kind of dust to which workers are exposed during their employment.

The simplest process, from this point of view, is perhaps *sandblasting*. It is the process of projecting sand or other grit, by means of compressed air, against a surface.

It can be carried out in various ways. For large articles the operator works in a specially constructed room, and he is protected by special clothing, and a helmet which is supplied with pure air under pressure. Small articles are treated in a closed cabinet, the worker passing his arms through guarded holes to direct the abrasive while watching the process through a glass panel.

The dust hazard is from the abrasive, usually quartzose sand or crushed flint. Metal grit or shot has now replaced sand as the abrasive to a considerable extent, and where

it is used on clean metal no siliceous dust is produced. When it is used for cleaning metal castings, dust is produced from the adherent moulding sand, which is highly siliceous.

In the 5-year period under review there were 45 deaths from silicosis amongst sandblasters. Of these, 38 were fully investigated and the ages at death and the period of employment on sandblasting were determined. The striking fact which emerges is the short periods of employment which caused death from silicosis, compared with other occupations. All had been employed less than 20 years; 8 less than 5 years; 15 between 6 and 10 years; 11 between 11 and 15 years; and only 4 over 16 years. In the census of England and Wales, 1931, the total numbers employed do not exceed 1395. This gives with 45 deaths in 5 years a mortality-rate of 6·4 per 1000 living. It is actually higher than this because the census figures include shotblasters working on clean metal, who are not exposed to siliceous dust.

Silicosis is found amongst sandblasters in various parts of the world. The same features, a short period of employment and rapid course of the disease, characterise the cases in this occupation.

Flint and pebble crushing.—Flint, a chalcedonic form of silica, is crushed for making chicken grit, sandblasting grit, abrasive papers, and brake-sand for tramcars. The flints may be first calcined, in order to make the material more friable and whiter before crushing. The persons employed are few in number and often the employment is casual or intermittent, so that it is impossible to estimate the actual damage to the health of the men employed. Uncomplicated silicosis, with total disablement, was found in one man who had been employed on flint-grinding during a total period of eleven months, in three months of which there was intermittent exposure to concentrations of dust ranging from 5200 (148) to 10,225 (292). During the five-year period, 1930 to 1934, there were 9 deaths from silicosis.

Refractories industry.—Some 3000 workers are employed. The processes include the quarrying or mining of the raw material, usually a sandstone of the coal measures called ganister, which occurs in open quarries and in mines, or, in some localities, sands or "pocket-clays" are used.

The raw material, which contains usually from 92 to 98 per cent. of silica, is crushed, mixed with suitable bonding substances, and made into silica bricks, silica cement, steel moulders' composition, and similar products for use as refractories in the manufacture of metals, especially steel and steel castings, and in the construction of gas-retorts and flues.

During the five-year period, 51 deaths were certified due to silicosis in persons employed in this industry, a rate of about 3 per 1000 employed. There was some diminution in the number in the later years of the period.

Manufacture of abrasive soaps.—The raw material may be a highly siliceous quartzite rock containing 98 per cent. of silica, or crystalline quartz or quartz-sand. It is used in the manufacture of abrasive soaps by mixing it with powdered soap, anhydrous sodium carbonate, and sometimes other substances.

About ten years ago numerous firms became engaged in this manufacture, who had no knowledge of the dangers of exposure to the dust and were inadequately provided with protective measures. This resulted in the occurrence at one factory of 3 or 4 cases of respiratory disease which was regarded as an acute form of silicosis.[14]

The manufacture in this factory was commenced in 1910, but was not important in quantity until 1921, and in August, 1928, it was given up owing to the death of workers attributed to the inhalation of the dust. Of a total of 81 persons employed on the process, 22 left during the month in which they joined, or in the month following. One of these, who left in September, 1919, died in 1927 of tuberculosis after ten months' illness. Thirteen deaths are known to have occurred amongst the remaining 59 employed, the cause of death being tuberculosis or silicosis. The Chart shows the total number of persons engaged in the manufacture at this factory, the period of employment, and the date of death of those who are known to have died.

A summary of the history of the fatal cases and of one (No. 31) who developed silicosis and is under treatment is as follows:—

CASES OF RESPIRATORY DISEASE INDICATED ON THE CHART

No.

3. Joined July, 1919, aged 14 (female). Left Nov. 20th, 1928. T.B. in sputum December, 1928. Died Jan. 3rd, 1929. At p.m. the tuberculous lung-lesions appeared to be of about four months' duration. It is not probable that this person was a source of infection in the factory. Symptoms dated only from August, sputum was very scanty and positive on the third examination (December, 1928).
7. Joined August, 1919, aged 14 (female). Left September, 1919. Attended hospital March 26th, 1926. Sputum positive; no X ray. Died Jan. 24th, 1927.
17. Joined January, 1923, aged 14 (female). Left March, 1924; rejoined January, 1926, left April, 1928. Sanatorium March, 1928. Sputum negative three times. Died April 26th, 1928.
19. Joined May, 1923, aged 44 (male). Left 1926. Died March 21st, 1926, after illness of one month (T.B. in sputum). No p.m.
24. Joined March, 1924, aged 14 (female). Died Jan. 10th, 1927, after illness of a few months. Certified P.T. No p.m.
26. Joined August, 1924, aged 15 (female), left May, 1928. Died June, 1928, after an illness of five months. P.m. silicosis. T.B. in glands.
35. Joined September, 1925, aged 14 (female), left 1928. Cervical glands removed 1928. Died Oct. 10th, 1935. P.m. massive silicosis of lungs and glands and miliary silicosis of lungs, glands, and spleen.
36. Joined October, 1925, aged 14 (female), left March, 1928. Died June 4th, 1928, after an illness of three months' duration. Sputum repeatedly negative. P.m. chronic fibrosis of lungs and glands. No evidence of tuberculosis, no T.B. found.
39. Joined October, 1925, aged 14 (female), left June, 1926, rejoined February, 1927, left July, 1927. Died Oct. 21st, 1927, after an illness of five months' duration. No p.m. X ray in August; diagnosis miliary T. No sputum.
42. Joined February, 1926, aged 16 (male), off five weeks August–September, 1927, with cough; returned September, 1927, to April, 1928; then to sanatorium until November, 1928. Admitted hospital January, 1929, T.B. in sputum. Died Dec. 27th, 1929. P.m. very advanced P.T. and silicosis.
44. Joined February, 1926, aged 15 (female), to August, 1928. Died P.T. Sept. 8th, 1933.
48. Joined August, 1926, aged 15 (male), left May, 1927. On Nov. 23rd, 1928, X ray negative, clinical examination indefinite. T.B. in sputum June 18th, 1932. Died April 24th, 1933.
49. Joined September, 1926, aged 15 (male), left August, 1928. T.B. in sputum Feb. 7th, 1934. Died P.T. July 7th, 1935.
63. Joined October, 1927, aged 14 (female), left August 1928. T.B. in sputum on July 23rd, 1930. Died P.T. Sept. 9th, 1930.

31. Joined January, 1925, aged 17 (male), left August, 1926. X ray on Sept. 17th, 1932, diagnosis "miliary tuberculosis," later changed to "silicosis." No sputum. Later abscess in neck. Sputum negative on March 7th, 1935 (under treatment).

Cases of silicosis developing rapidly in workers in the manufacture of abrasive polishes have been described by Giese,[15] Teleky,[16] and Kilgore.[17]

Polishing compositions and parting powders containing silica.—The most important forms of silica used for these products are Tripoli and Neuburg chalk. Tripoli is regarded as a chalcedonic variety of silica,[18] and it contains from 96–99 per cent. silica. The substance generally known by the name is imported from Seneca, Missouri. The name comes from Tripoli in North Africa, where the product is a true diatomite.

Two fatal cases of silicosis with tuberculosis have occurred in this country from exposure to dust of Tripoli. The two men had been employed for periods of 10 and 11 years respectively, mixing the ingredients in the manufacture of parting-sand in one case, and of polishing-composition in the other case.

Neuburg chalk is a natural deposit of siliceous material at Neuburg on the Danube. The silica content is given as from 65–97 per cent. At one time this material was believed to be harmless, but recently there have been definite cases of pulmonary disease following exposure to the dust in this country. Koelsch and Kaestle[19] examined 30 workers employed with this material and found 8 who showed signs of silicosis.

Diatomite (kieselguhr, diatomaceous earth) is composed of minute, siliceous skeletons of aquatic plants. When pure it contains up to 96 per cent. of silica. It is used as a mild abrasive or polishing medium, as filtering material, and for insulating properties.

Radiological examination of six workers exposed to dust of kieselguhr for ten years, in this country, showed slight evidence of fibroses in two, and none in the others.

Legge and Rosencrantz[20] made an investigation at a diatomaceous deposit in Santa Barbara County in California, and by clinical and radiological examinations of 108 men, silicosis was found in 81, very early in 15, early in 45, moderately advanced in 15, and advanced in 6. Gudjonsson[21] tells of several workers exposed to high concentrations of fine dust of diatomaceous earth, digging and grinding it for many years. It contained over 90 per cent. free silica. No silicosis in an important degree was found.

Grinding of metals.—The processes which cause silicosis in the grinding of metals are confined to those in which grindstones composed of natural sandstone are used. These are obtained chiefly from the millstone-grit sandstones of Derbyshire and the Sheffield and Newcastle districts. Grinding may be done wet or dry, and the metal being ground may be moved by hand, or by mechanical power on a machine. The processes of dressing the surface of the grindstone are also very important from the health point of view.

The concentration of dust produced varies with the amount of attrition of the grindstone in these processes. Examples of dust concentrations in wet hand-grinding are: table-blades, 280 (8); chisels, 1150 (33); scythes, 660 (19). At wet machine-grinding: paper-knives, 130 (3·7); files, 270 (7·7); edge-tools, 120 (3·4). Dry hand-grinding (with exhaust); sheep-shears, 240 (7).

During the five years, 1930 to 1934, the total number of deaths certified as due to silicosis was 142. The numbers for the consecutive years show a decline, 36, 36, 31, 20, and 19, and it may be that this decline is due to two causes: (1) the change from sandstone to artificial abrasive wheels, and (2) the effect of stringent preventive measures in the grinding rooms.

It was estimated that in 1926 about 1600 natural grindstones were in use in the Sheffield district for hand-grinding. This number was reduced to about 200 in 1933 and many of these grindstones were not in regular use. In the Birmingham district there were 480 natural sandstone wheels in use in 1926 and 452 persons employed. To-day there are only 22 sandstone wheels in use and 18 persons employed. An interesting survey of the Sheffield experience in tuberculosis amongst grinders is contained in the annual report of Dr. John Rennie, the medical officer of health, for 1934 (Table H, p. 21). In this Table the mortality among grinders is compared with that of all persons over 15, in quinquennia from 1886 to 1934, shown as percentage of deaths from tuberculosis of the lungs to all causes. While this has shown amongst all persons over 15 a steady decline from 14·4 per cent. in 1886–90 to 6·7 per cent. in 1931–34, amongst grinders it has shown a variation between 35·6 per cent. reaching a maximum of 53·5 per cent. in 1911–15; it returns to 38·2 per cent. in 1926–30, and in the last quinquennium falls below the starting point to 27·8 per cent. This may be the first sign of a progressive decline. In Table I. of Dr. Rennie's report the mortality-rates for tuberculosis of the lungs amongst grinders and amongst cutlers are shown in comparison with that for all persons over 15 as a rate per 1000 of the population for the years 1925 to 1934. The figures show a reduction from 6·3 to 4·1 amongst grinders, but no reduction amongst cutlers. The rate for all persons over 15 over the period shows a fall from 1·1 to 0·8 per 1000.

Glaziers'-diamond setter.—This unique case was that of a man aged 55, who died of massive and nodular silicosis with tuberculosis. He had been employed for 14 years on a process in which a small abrasive wheel composed of a siliceous stone gave off a fine cloud of dust, which, though scarcely visible, was found to have a concentration of 350 (10). In a petrographic examination of the stone no mineral other than silica was detected.

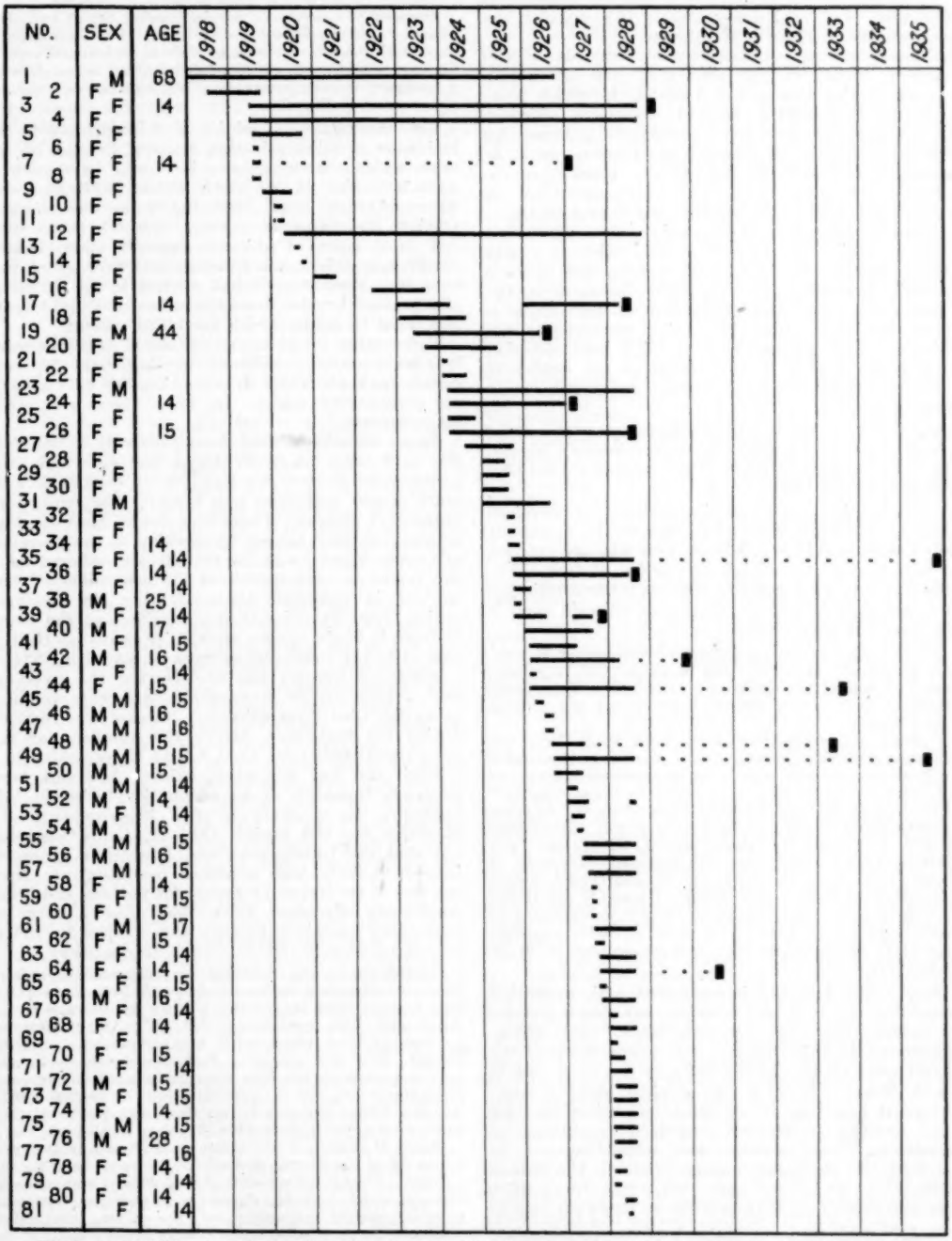
Sandstone industry.—As a cause of silicosis this is the most important of the group of industries in which stone is got and prepared for use or sale. It includes the quarrying, or mining, and dressing of sandstones which are sedimentary siliceous rocks, consisting more or less of quartz-grains, mixed with other minerals, and held together by a cement of varying amount and composition. About 12,000 men are employed on the process in quarries and, in addition, about an equal number of masons are employed in builders' and sculptors' yards throughout the country. The workers who are most affected by silicosis are the stonemasons, and after them the quarrymen and rockgetters.

During the five-year period, 1930 to 1934, the number of fatal cases of silicosis amongst sandstone quarrymen and stonemasons was 372. About 300 of these deaths were amongst stonemasons, and as there are probably about 20,000 sandstone masons in England and Wales, the annual mortality-rate for silicosis is about 3 per 1000 employed.

The following are average concentrations of dust found at various classes of work in the sandstone industry: masons, 545 (16); rockgetters, 319 (9); drillers, 939 (27); quarrymen, 1956 (56); crushermen, 1132 (32). An investigation into the occurrence of silicosis in the sandstone industry was carried out for the Home Office by Sutherland and Bryson[22] in 1929. Of 454 examined clinically, 268 had fibrosis; radiological examination of 266 showed silicosis in 112. In a clinical study of silicosis in 1000 consecutive examinations of workers in quarrying and dressing sandstone, Ferguson[23] found clinical evidence of pulmonary fibrosis in 433. Radiological examination of 173 of these showed silicosis in 109.

Silicosis has been described by Kranenburg [24] in Holland, and by Thiele and Saupe [25] amongst quarry workers in the highly quartzose sandstone of the Elbe district. Koelsch and Kaestle [26] examined 173 sandstone workers and found that 76 per cent. were severely affected after employment for from 20 to 40 years. Teleky and Lochtkemper [27] describe cases of silicosis amongst workers in "grey-wacke." In the sandstone industry of Ohio and Indiana [28] examination of 919 workers showed that the incidence of silicosis and the number of cases of

CHART SHOWING RECORD OF PERSONS EMPLOYED AT ONE FACTORY IN THE MANUFACTURE OF ABRASIVE SOAP-POWDER WITH INCIDENCE OF FATAL RESPIRATORY DISEASE



The horizontal lines show the duration of employment of each worker and the black rectangles the time of death in the fatal cases that are known.

tuberculosis increased with age and length of exposure. An investigation was made by Wulff [29] amongst workers in Sweden on quartzite sandstone containing 94 per cent. of silica.

Silicosis in a grave-digger.—A case was described by Edwards [30] of a man, aged 32, who died of silicosis with tuberculosis after working as a grave-digger for 17 years. The graves were in red sandstone and pneumatic drills were often used for excavating. The work was very dusty and in dry weather the men worked in spells of 20 minutes.

Tunnel mining.—Silicosis was certified as the cause of death in five men employed as tunnel-miners, during the period 1930–34, in which post-mortem examination showed extensive silicosis. In three cases the men had been engaged in tunnelling for water-supply or sewer construction work in sandstone in the North of England. Cases of severe silicosis in tunnel-miners have been described as occurring in Sydney, New York, and Johannesburg.

Granite industry.—The granites are crystalline rocks in which the amount of free silica as quartz rarely exceeds one-third of the weight, and in some granitic igneous rocks frequently included in the commercial term, the proportion of free silica is much less than this. The other constituents are silicates. The processes in getting and dressing granite are similar to those used in the sandstone industry, but pneumatic tools are much more frequently used.

The following are average concentrations of dust found at various classes of work in the granite industry: masons, 412 (12); rockgetters, 343 (10); drillers, 1935 (55); crushermen, 1834 (52).

In the radiograms of granite workers the prevalent type of shadows indicating fibrosis is somewhat different from that found in workers who are exposed to dust containing a high proportion of free silica. It is a finer type of mottling with more linear striation and reticulation, but nodulation of silicotic type is also found in some cases.

An investigation was carried out by Sutherland, Bryson, and Keating [31] in which 494 workers were clinically examined and 211 of these were examined radiologically. Fibrosis was found in 260 (52·6 per cent.) and silicosis in 36 (17 per cent.).

Extensive investigations have been made into the incidence of silicosis amongst granite workers at Vermont.[32] An investigation was made in a representative group of 961 granite workers from four towns in Massachusetts [33] with clinical and radiological examinations. Silicosis was found in 15·2 per cent. and silicosis with tuberculosis in 7·6 per cent. of those examined. Teleky and Lochtkemper [34] found only the slightest evidences of pneumoconiosis in workers on a quartz-free basalt after 20 to 40 years' employment. Gutzeit [35] points out the less severe lung changes which follow exposure to dust of granite compared with those following exposure to dust of quartz-schist with a silica content of 91 to 95 per cent.

Slate.—The industry is concerned with quarrying or mining the rock and making and shaping slates for roofing, and other structural work. It is widely distributed in this country, but about 9000 of the 11,000 wage-earners in the industry are employed in North Wales. Slate is the typical cleaved rock. The most important constituents quantitatively are silica, free as quartz, and combined as silicates of aluminium, iron, alkalis, and other bases. In Penrhyn (Welsh) slates quartz exists to the extent of 34·66 to 43·26 per cent., while the total silica (free and combined) is from 57·75 to 63·01 per cent.[36]

Wade [37] made an investigation into the mortality-rate for tuberculosis amongst slate workers in a district of North Wales. His report shows that from 35 years of age onwards, and, particularly in the later ages of life, those engaged in the slate industry are very unfavourably placed.

A medical inquiry was undertaken for the Mines' Department by Sutherland and Bryson [38] amongst slate workers in North Wales. Clinical examinations of 120 workers showed that severe fibrosis of the lungs existed amongst the older millmen. Fourteen out of 52 millmen examined radiologically showed signs of silicosis.

Dreessen [39] described a survey carried out at two slate quarries and their associated mills. The radiographic shadows in these cases were of the fine reticulated type of fibrosis, with, in advanced cases, dappled areas showing a tendency to conglomerate. They had not the nodular appearance of silicosis.

Gold mining.—Gold mining is of importance to the incidence of silicosis in this country, because of the cases which arise amongst miners who have gone to work for a time in the South African gold-mines and have returned home suffering from the disease. During the five-year period, 1930–34 there were 104 fatal cases of silicosis amongst these miners certified in this country, an annual average of just over 20. Most of them had worked in the tin-mines of Cornwall or the hæmatite-mines of Cumberland, and went to South Africa as skilled miners.

Tin mining.—The mining of tin ore in this country is almost entirely confined to Cornwall. The ore occurs in lodes which traverse granite or "killas," an argillaceous schist. In 1934 there were 1645 wage-earners.

Many tin-miners went from Cornwall to work in the gold-mines of South Africa and elsewhere and, in the early days of the Rand, when conditions were much worse than they are to-day, they contracted pulmonary disease. There is no doubt, however, that silicosis has been caused by working in the tin-mines of Cornwall, for 38 of the rock-drillers referred to in the report on the health of Cornish miners [40] had worked in Cornwall alone. During the five-year period, 1930–34, silicosis was certified as the cause of death in 91 tin-miners, equal to an annual mortality-rate of 11 per 1000 wage-earners employed in 1934.

Hæmatite iron-ore mining.—During the five-year period 1930–34, 36 hæmatite-miners were certified as having died from silicosis. No case was certified during the first year, 1930; the numbers for the subsequent years were 10, 7, 6, and 13 respectively.

Until the last few years silicosis had not been generally regarded as an occupational risk in this industry. In a study of the Registrar-General's statistics for the period 1910–12, Collis [41] pointed out that the Cumberland and Lancashire group of iron-ore miners had a higher mortality-rate than the rest of the ironstone group for phthisis and other respiratory diseases. Since that time a form of pulmonary fibrosis frequently accompanied by tuberculosis has been proved to exist in this industry.

Watson found the following dust concentrations in a hæmatite-mine at a distance of 50 yards from the working face without dust suppression; after an average of six shots with 9 lb. explosive: 222,000 (6343); after an average of four shots with 6 lb. explosive: 105,000 (3000). With the use of a dust-suppressing device the air was apparently free from dust, but actually the thermal precipitator showed a concentration of 30,000 (867). At wet-drilling apparently no dust was produced, but there were actually over 2000 (57) very small particles.

Cronin [42] examined 100 drillers and 16 non-drillers, and found 64 of the former and all the latter to be clinically normal. Thirty drillers showed well-defined and constant features which included dyspnœa on exertion, flattening and diminished expansion of the chest, diminished resonance on percussion, and a change in the quality of the breath sounds.

Radiological examinations of hæmatite-miners show changes in the lungs which resemble those of silicosis as it occurs in other industries, and the changes progress like those of silicosis. Stewart and Faulds [43] have described 15 fatal cases of pulmonary fibrosis in hæmatite-miners. Fatal cases of silicosis have occurred in a hæmatite-mine in the South of England in which the country rock is granite, which contains 27 per cent. of free silica and 64·5 per cent. of total silica.

Coal mining.—During recent years evidence has been accumulating which shows that certain workers employed underground in coal-mines contract a disabling and even fatal fibrosis of the lungs.

In 1909 the Royal Commission on Mines [44] realising the possible danger of drilling in siliceous rock in coal-mines recommended that "water or some equally effective means" should be used when the process is being carried out. Cases of silicosis were found in rock-drillers employed in Somerset coal-mines [45] in 1925, and in 1926, Tattersall [46] reported cases of silicosis among hard-ground workers in coal-mines in South Wales.

The processes underground in a coal-mine which involve direct exposure to siliceous dust are: (1) driving a hard-heading, cross-measure drift, staple pit or sinking pit; and (2) ripping or brushing, i.e., cutting the roof, floor, or sides of a roadway to increase height or width. These processes involve boring the shotholes, shot-firing, and loading the débris.[47]

The following dust-counts are of samples taken by Watson with the thermal precipitator at various distances from the working point in a coal-mine, while means were not taken to suppress the dust. As usual the samples were freed of carbonaceous matter by incineration. Drilling, usually in sandstone, at 15 yards, 10,860 (310); at 65 yards, 860 (25); at 160 yards, 650 (18). Shot-firing (with 24 oz. explosive), at 65 yards distance, 2000 (57); (with 40 oz. explosive), at 160 yards distance, 2300 (65); near the bottoms of the upcast shaft, 550 (15).

In the period June 1st, 1931, to Dec. 31st, 1935, the Silicosis Medical Board issued a total of 987 certificates on account of silicosis in coal-mines. These included 237 suspensions, 581 for total disablement, and 169 for death. The distribution of these cases in the different coal-fields is shown in Table II.

The numbers of certificates issued in respect of fatal cases, if calculated on the number per 100,000 wage-earners employed in December, 1935, is 22·37 for Great Britain; 4·13 for England; and 112·59 for South Wales and Monmouth. The Somerset coal-field has the highest rate, of 146·62 certificates for death per 100,000 wage-earners. No completely satisfactory explanation of this distribution has yet been reached.

Fisher [48] has shown that there is no constant relation between the amount of drilling and the incidence of silicosis. The same is true of the practice of stone-dusting. It is held by some that a risk of bronchitis is incurred,[49] by the men, overheated, travelling out of certain pits by slants through chilling currents of air which reach a velocity of 2500 ft. per minute with a temperature drop of 20° to 40° F. T. David Jones [50] found that four times as many cases of silicosis were certified from collieries with slants as from those without slants. W. R. Jones [51] stated that the mineral sericite is present in the sandstones of the anthracite coal-field, while in those of well-known Scottish collieries, sericite is either absent or rare. According to Cooke,[52] sericite is constantly present in the atmosphere of the Lancashire coal-mines, but he found that silicosis was extremely rare amongst the coal-miners there. That "prolonged exposure to the working conditions incident to coal mining is frequently associated with the gradual development of alterations in the radiological appearances of the lungs" is a conclusion reached as a result of a radiological study of certain groups of industrially healthy South Wales coal-miners.[53] The distinction in the degrees of change found between workers in anthracite coal and in bituminous coal agree with those reported by Russell.[54] In the Welsh study the anthracite group showed a degree of "mottling" greater than that found in the semi-bituminous group. Harper [55] found no radiological difference between cases of silicosis in South Wales and those seen by him in the Belgium coal-fields. Lyle Cummins [56] directed attention to the variety of occupations included in the coal-mining industry.

TABLE II.—*Silicosis in Coal-mines*

Certificates issued, by the Medical Board, for Silicosis and Silicosis with Tuberculosis during the period June 1st, 1931, *to Dec.* 31*st*, 1935.

District.	Number of wage-earners on Dec. 14th, 1935.	Number of certificates issued for—		Suspension.
		Death.	Total disablement.	
ENGLAND.				
Northumberland	43,865	..	1	..
Durham	104,244	..	2	..
Cumberland and Westmorland	4,862	..	..	..
South Yorkshire	94,427	4	8	10
West Yorkshire	41,991	..	3	1
Lancashire and Cheshire ..	59,607	5	5	5
North Derbyshire	41,623	..	..	..
Nottingham	44,832	1	2	..
South Derbyshire	3,179	..	..	..
Leicestershire	9,055	..	..	..
Cannock Chase	21,366	1	2	..
North Staffordshire	22,543	3	16	6
South Staffordshire and Worcestershire	4,460	..	1	..
Shropshire	2,623	..	1	..
Warwickshire	16,391	..	..	..
Forest of Dean	5,075	..	2	2
Bristol	838	..	..	..
Somerset	3,410	5	17	7
Kent	7,303	3	6	4
Total	531,694	22	66	35
WALES.				
South Wales and Monmouth	130,552	147	511	198
North Wales	8,676	..	1	..
Total	139,228	147	512	198
SCOTLAND.				
Fife and Clackmannan ..	21,625	..	..	1
Lothians (Mid and East) ..	12,472	..	2	..
Lanarkshire	38,830	..	1	3
Ayrshire	11,311	..	..	..
Total	84,238	..	3	4
GREAT BRITAIN	755,160	169	581	237

A clinical and radiological examination of workers exposed to anthracite coal dust was arranged by the Industrial Pulmonary Disease Committee of the Medical Research Council in 1933.[57] The 40 selected at random from amongst the 250 workers were coal-trimmers at Swansea docks. The committee was unable to find, in this series of cases, any evidence that the inhalation of anthracite or other coal dust had caused fibrosis of the lungs.

Collis and Gilchrist [58] described results of the clinical and radiographic examination of eleven coal-trimmers. The radiographs showed mottling in eight cases, massive bilateral shadows in one, and no definite mottling in two.

In the report of a study made in the Anthracite Region of Pennsylvania by the United States Public Health Service [59] the results of examination of a total number of 2711 workers in 3 anthracite coal-mines are described. Anthraco-silicosis was found in 23 per cent., and the incidence varied with the period of employment, and the concentration and nature of the dust to which they were exposed. Böhme [60] described the results of examination of 3318 rock-drillers working in the Ruhr coal-mines for periods from 5 to 25 years. Of these, 19·44 per cent. showed changes, due to dust, of varying degrees of severity from slight, 14·7 per cent., to grave, 0·18 per cent.

From a study of systematic examinations of 9807 stone-workers in the coal-mines of the Ruhr district

Reichmann and Schürmann [61] found the prevalence and degree of severity to be 1048 (10·6 per cent.) slight, 89 (0·9 per cent.) moderate, and 14 (0·16 per cent.) severe. In 493 cases of severe silicosis the duration of employment was, on the average, 18·3 years. Death was due to simple silicosis with heart failure in 37 per cent., and to an accompanying tuberculosis in 63 per cent.

Courtois [62] made a study of pulmonary disease in 136 coal-miners at Charleroi. Radiological examinations of these workers are classified as negative 33, positive (nodular opacities 30, confluent opacities 61) 91, other conditions (bronchitis, emphysema, and deformities) 12. Post-mortem examination showed that the nodules were typical, simple, silicotic nodules. In the massive fibrotic areas the nodular arrangement had disappeared except at the periphery. Leclercq [63] has described the occurrence of silicosis amongst coal-miners in the north of France. Magnin [64] found that the disease produced amongst workers underground in the coal-mines of Central France is silicosis, which occurs in nodular and pseudo-tumoral forms. Badham and Taylor [65] found in the coal-miners of New South Wales several different types of pulmonary fibrosis. One type was thought to be either a silicatosis due to silicates, or a pure anthracosis due to coal dust.

TABLE III.—*Pottery Industry*

Mortality-rates for silicosis in certain occupations calculated on fatal cases investigated by the Factory Department in the five years, 1930 *to* 1934.

1. EXPOSURE TO FLINT DUST

Occupation: Males (M.), Females (F.).	Estimated numbers employed.		Deaths in 5 years.		Annual mortality-rates per 1000 employed.	
	M.	F.	M.	F.	M.	F.
Flint millers and mill labourers	240	..	7	..	5·84	..
China biscuit ware placers	152	..	9	..	11·84	..
China biscuit oddmen	70	..	7	..	20·00	..
Polishers and grinders	330	..	14	..	8·48	..
China biscuit warehouse	..	223	..	7	..	6·28
Totals	792	223	37	7	9·34	6·28

2. EXPOSED TO DUST OF EARTHENWARE BODY

Sliphouse	417	..	6	..	2·88	..
Throwers	24	..	..	..	..	..
Turners	132	..	2	..	3·02	..
Handlers	113	336	4	..	7·08	..
Platemakers	364	108	16	..	8·78	..
Dishmakers	113	6	4	..	7·08	..
Handbasin makers	95	4	..	..	..	..
Saucer makers	52	156	3	1	11·54	1·28
Cup makers	46	248	1	3	4·34	2·42
Jiggerers and jolliers	261	122	21	..	16·92	..
Pressers and casters	221	592	19	1	17·18	0·36
Hollow-ware pressers	248	..	22	..	17·74	..
Throwers' assistants	..	30	..	1	..	3·33
Totals*	2086	1602	98	9*	9·49	1·12

3. EXPOSURE TO DUST OF CHINA BODY

Sliphouse	121	..	1	..	0·16	..
Throwers	102	8	..	..	..	..
Turners	161	18	5	..	0·62	..
Handlers	33	211	..	..	..	..
Platemakers	52	..	2	..	7·69	..
Dishmakers	10	..	..	..	..	..
Handbasin makers	7	..	..	..	..	..
Saucer makers	74	6	5	..	13·51	..
Cup and bowl makers	..	14	..	..	..	..
Jiggerers and jolliers	16	6	..	..	..	..
Jiggerers, flat ware	45	2	..	..	..	..
Pressers and casters	140	152	4	..	5·71	..
Totals	761	417	17	..	4·47	..

* Include 3 deaths of towers (females) for which numbers employed are not obtainable.

Pottery industry.—This industry includes several distinct branches, subdivision being determined by the nature of the article manufactured and the materials entering into the composition of the ware. The occurrence of silicosis is especially associated with two branches—earthenware and china.

In the manufacture of earthenware, the ingredients—ball-clay, china-clay, china-stone, felspar, and flint—in a ground state, are mixed together in the form of liquid slip, from which excess water is removed by pressing. The resulting composite body is made into the consistence convenient for the manufacture of the various articles. In the plastic state it is used by throwers, pressers, jiggerers and jolliers, handlers, modellers, and others, according to their craft, in the potters' shops. So long as it remains moist it is harmless, but in the process of manufacture fragments fall on benches and floors or adhere to the clothing of the workers, become dry, and give rise to dust. After the article has been made in the plastic form, partly dried, it is frequently subjected to the process of towing on a revolving disc, thus giving rise to dust. Processes of fettling, to remove irregularities of surface and edges, are done by hand. The articles are then placed in fireclay saggers with some sand, and fired in the oven. On removal from the oven the loosely adherent sand is brushed off. Subsequent processes of decoration and glazing are not associated with the occurrence of silicosis.

For the manufacture of china, the ingredients are calcined bone, china-clay, and china-stone, but it contains no flint. The processes of making the articles are similar, in general, to those employed for earthenware, but the articles require much more support in the process of firing than do earthenware articles, and to provide this support they are placed in finely powdered flint. The flint is prepared by calcining and subsequently crushing it in the dry state. The placing of china in saggers with flint is done by the china biscuit placers. When the saggers of china ware are taken from the oven they are emptied by the placers and "oddmen" and the flint, which was used in placing the ware, is removed by women in a series of processes known as "scouring." Finally, after the ware has been decorated and glazed, blemishes are removed by polishers who frequently use powdered flint, mixed with water, as a finishing abrasive on a rapidly revolving wheel.

TABLE IV

Summary of mortality-rates for silicosis in certain occupational groups, calculated on fatal cases investigated by the Factory Department in the five years 1930 *to* 1934.

Occupations exposing workers to dust of—	Numbers employed.	Deaths in 5 years.	Annual mortality-rates per 1000 employed.
	(M. & F.)	(S,* S+T*)	
Flint	1015	44 (27, 17)	8·66
Sanitary ware (body)	736	25 (12, 13)	6·78
General earthenware (body)	3688	107 (54, 53)	4·17
China (body)	1178	17 (7, 10)	2·89
Tiles (body)	975	12 (6, 6)	2·46
Placing sand	947	11 (5, 6)	2·32
Saggers	608	1 (1)	0·33

* S = silicosis; S+T = silicosis with tuberculosis.

Exposure to flint dust in the pottery industry occurs in the processes of the preparation of the flint by grinding; in the manufacture of general earthenware, earthenware tiles, sanitary earthenware, and electrical fittings, amongst those manipulating the earthenware body in the plastic and semi-dry states; in the manufacture of china, amongst those employed in placing the biscuit ware in powdered flint, and in removing the flint from it after firing; and in polishing finished ware with the use of flint. It is in those processes that the highest incidence of silicosis is found to occur. This was brought out as the result of a medical inquiry made by Sutherland and Bryson.[66]

The following results are selected from counts of samples of atmospheric dust taken by Watson with the thermal precipitator at various processes in the pottery industry; at breathing level, unless otherwise stated: (*a*) Flint-grinding, dry, with exhaust, 150 (4·3); flint-milling, wet (general air of the room), 109 (3); placing china biscuit ware (general air of the room), 121 (3·4). (*b*) Earthenware

plate-making, 176 (5); fettling (damp), 168 (4·8); fettling, dry, 201 (5·7). (c) Tiles, pressing, 213 (6); fettling, 275 (8). (d) Sanitary earthenware; general air of a casting shop, 164 (4·7). (e) China, cup-making and turning, general air of the shop, 181 (5).

In countries in which flint is not used in the manufacture of pottery respiratory diseases amongst pottery workers appear to be less prevalent than in England.

The occurrence of silicosis amongst pottery workers has been referred to by Koelsch [67] and Hartmann [68] in Germany, Langelez [69] in Belgium, Møller [70] in Denmark, Quaintance and Morris,[71] Pancoast and Pendergrass,[72 73] and others in America.

REFERENCES

1. Gardner, L. U.: Amer. Jour. Pub. Health, 1933, xxiii., 1247.
2. Magnin, J.: La Méd. du Travail, 1935, vii., 137.
3. Courtois, R.: Rev. Path. et Phys. du Travail, 1933, ii., 37.
4. Kettle, E. H.: Proc. Roy. Soc. Med., Sect. Path., 1933, xxvi., 28.
4A. Policard, A., and Morel, A.: La Méd. du Travail, 1932, iv., 56.
4B. Irwin, D. A.: Canad. Med. Assoc. Jour., 1934, xxxi., 135.
5. Silicosis: Internat. Labour Office, Geneva, 1930, p. 86.
6. Final Rep. Miners' Phthisis Prevention Comm.: Govt. Stat. Office, Pretoria, 1919, p. 10.
7. Owens, J. S.: Proc. Roy. Soc., Series A, 1922, ci., 18.
8. Same author: Jour. of Indust. Hyg., 1923, iv., 522.
9. Greenburg, L., and Smith, G. N.: Reps. of Invest., Bur. of Mines, Washington, 1922, No. 2392.
10. Greenburg and Bloomfield, J. J.: Pub. Health Reps., Washington, 1932, xlvii., 654.
11. Green, H. L., and Watson, H. H.: Med. Research Council, Spec. Rep. Ser. No. 199, London, 1935.
12. Hatch, T., and Thompson, E. W.: Jour. of Indust. Hyg., 1934, xvi., 92.
13. Bale, W. F., and Fray, W. W.: Ibid., 1935, xvii., 30.
14. Macdonald, G., and others: THE LANCET, 1930, ii., 846.
15. Giese: Quarzstaub, Schwielenlunge u. Lungentuberkulose, Jena, 1931.
16. Teleky, L.: Jahresb. ü. d. Tätigkeit d. preuss. Gewerbemed, 1927.
17. Kilgore, E. S.: Jour. Amer. Med. Assoc., 1932, xcix., 1414.
18. Abrasives, Part I., Dept. of Mines, Ottawa, 1927, No. 673, p. 70.
19. Koelsch, J., and Kaestle: Silicosis, Internat. Labour Office, Geneva, 1930, p. 372.
20. Legge, R. T., and Rosencrantz, E.: Amer. Jour. Pub. Health, 1932, xxii., 1055.
21. Gudjonsson, S. V.: Aertzlich. Sachverst.-ztg., 1934, xi., 1.
22. Sutherland, C. L., and Bryson, S.: Rep. Occurr. of Silicosis Among Sandstone Workers, H.M. Stationery Office, London, 1929.
23. Ferguson, T.: Jour. of Indust. Hyg., 1934, xvi., 203.
24. Kranenburg, W. R. H.: Silicosis, Internat. Labour Office, Geneva, 1930, p. 512.
25. Thiele and Saupe, quoted by Böhme, A.: Ibid., p. 356.
26. Koelsch, F., and Kaestle: Ibid., p. 371.
27. Teleky, L., and Lochtkemper, I.: Archiv f. Gewerbepath. u. Gewerbehyg., 1932, iii., 693.
28. Russell, A. E.: Silicosis, Internat. Labour Office, Geneva, 1930, p. 549.
29. Wulff, H. B.: Acta Path. et Microb. Scand., 1934, xi., 389.
30. Edwards, P. W.: THE LANCET, 1931, i., 1238.
31. Sutherland, Bryson, and Keating, N.: Rep. on Silicosis Amongst Granite Workers, H.M. Stationery Office, 1930.
32. U.S. Public Health Bull. No. 187, Washington, 1929.
33. Rep. Special Indust. Commiss. Commonwealth of Massachusetts, Boston, House No. 1350, 1934.
34. Lochtkemper and Teleky: Archiv f. Gewerbepath. u. Gewerbehyg., 1932, iii., 711.
35. Gutzeit, K.: Zeits. f. Tuberk., 1934, lxix., 412.
36. Reade, T. M., and Holland, P.: Proc. Liverpool Geol. Soc., 1898, viii., Part 2, p. 293.
37. Wade, T. W.: Rep. on Public Health, No. 38, Min. of Health, Welsh Bd. of Health, H.M. Stationery Office, 1927.
38. Sutherland and Bryson: Report on Inquiry into Occurrence of Disease of Lungs in Slate Industry, Mines Dept. London, H.M. Stationery Office, 1930.
39. Dreessen, W. G.: Jour. of Indust. Hyg., 1933, xv., 66.
40. Haldane, Martin, and Thomas: Report on the Health of Cornish Miners, Cd. 2091, H.M. Stationery Office, London, 1904.
41. Collis, E. L.: Proc. Roy. Soc. Med., 1923, xvi., Sect. Epidem., 96.
42. Cronin, A. J.: Jour. of Indust. Hyg., 1926, viii., 291.
43. Stewart, M. J., and Faulds, J. S.: Jour. Path. and Bact., 1934, xxxix., 233.
44. Second Rep. Royal Commission on Mines, 1909, Cd. 4820.
45. Fisher, S. W.: Trans. Inst. Min. Engrs., 1935, lxxxviii., 377.
46. Tattersall, N.: Jour. of Indust. Hyg., 1926, viii., 466.
47. Hay, P. S.: Personal communication, January, 1936.
48. Fisher: Trans. Inst. Min. Engrs., 1935, lxxxviii., 377.
49. Haldane, J. S.: Ibid., 1935, lxxxviii., 388.
50. Jones, T. D.: Ibid., 1935, lxxxviii., 406.
51. Jones, W. R.: Jour. of Hyg., 1933, xxxiii., 327.
52. Cooke, W. E.: Trans. Inst. Min. Engrs., 1935, lxxxviii., 393.

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INHIBITION AND INDUCTION OF UTERINE BLEEDING BY MEANS OF ŒSTRONE

BY S. ZUCKERMAN, D.Sc.Lond., M.R.C.S.Eng.
BEIT MEMORIAL RESEARCH FELLOW
(From the Department of Human Anatomy, Oxford)

THE increasing clinical importance of œstrone* in the treatment of conditions such as amenorrhœa or sterility resulting from uterine hypoplasia makes it necessary that the available data about the physiological action of the hormone on the primate uterus should be properly understood. At the present time two apparently conflicting statements are made on this subject: the first, that the continuous injection of the hormone inhibits menstrual bleeding, and the second, that uterine bleeding occurs, even in ovariectomised human beings and monkeys, during the course of prolonged œstrin treatment. The purpose of this paper is to examine the facts bearing on these two points.

Allen's [1] observation that the cessation of injections of œstrin into castrated monkeys is succeeded after a few days by a phase of uterine bleeding constituted the first definite knowledge of the endocrine control of the primate endometrium. His finding has been repeatedly confirmed, both on monkeys and on human beings, and the bleeding occasioned in this way has been justifiably related to that occurring either after removal of the ovaries or after rupture of ovarian follicles. In both cases the bleeding that normally follows these procedures can be delayed if treatment with œstrin is begun immediately after the operative interference.

The normal histological effects of œstrin on the primate endometrium have also been elucidated. The hormone, in castrated subjects, promotes considerable mitotic activity in the uterine epithelium,

* Œstrone (keto-hydroxy-œstrin) is at present one of the more readily available and most commonly used of the œstrus-producing female sex hormones to which the general term "œstrin" was applied before their chemical nature had been elucidated. Where the term "œstrin" is used in the present paper it should be taken to mean œstrus-producing female sex hormones in general.

(Continued from previous column)

53. Ann. Report, King Edward VII. Welsh Nat. Memorial Assoc., 1930.
54. Russell: Silicosis, Internat. Labour Office, Geneva, 1930, p. 538.
55. Harper, A.: Brit. Med. Jour., 1934, i., 1920.
56. Cummins, S. L.: Ibid., 1935, i., 287.
57. Ibid., 1934, i., 198.
58. Collis, E. L., and Gilchrist, J. C.: Jour. of Indust. Hyg., 1929, x., 101.
59. Spec. Bull. 41, Commonwealth of Pennsylvania, Dept. of Labor and Industry, Harriesburg, Penn., 1934.
60. Böhme, A.: Silicosis, Internat. Labour Office, Geneva, 1930, p. 354.
61. Reichmann and Schürmann: Zentralb. f. Gewerbehyg., 1935, xxii., 121.
62. Courtois, R.: Rev. Path. et Phys. du Travail, 1933, x., 37.
63. Leclercq, J.: La Méd. du Travail, 1933, v., 222.
64. Magnin, J.: Ibid., 1935, vii., 137.
65. Badham, C., and Taylor, H. B.: Med. Jour. Australia, 1933, i., 511.
66. Report on an Investigation into the Incidence of Silicosis in the Pottery Industry, H.M. Stationery Office, 1926.
67. Koelsch, F.: Silicosis, Internat. Labour Office, Geneva, 1930, p. 373.
68. Hartmann: Zentralb. f. Gewerbehyg., 1935, xxii., 142.
69. Langelez, A.: Bruxelles Méd., 1935, xv., 272, 303.
70. Möller, P. F.: Acta Radiol., 1934, xv., 587.
71. Quaintance, P. A., and Morris, F. J.: Calif. and Western Med. Jour., 1934, xliv., 337.
72. Pancoast, H. K., and Pendergrass, E. P.: Amer. Jour. Roentgen, 1931, xxvi., 556.
73. Same authors: Pneumoconiosis, New York, 1926, p. 136.

with restoration of the mucosa to the "interval" condition typically characterised by long tubular glands. Prolonged and unopposed action of the hormone in rats, guinea-pigs, and mice has been shown to result in cystic endometrial hyperplasia,[2] and an experiment with a chimpanzee (*Pan satyrus*), and another with a mangabey monkey (*Cercocebus torquatus atys*) yielded the same finding.[3] Moreover excessive œstrin treatment has been found to induce cystic hyperplasia of the human endometrium.[4] Of subjects thus far tested, only the rhesus monkey (*Macaca mulatta*) appears not to respond to prolonged injections of œstrin by developing a cystic endometrium.[5] For example, the uterine mucosa of one animal belonging to this species appeared normal after as many as 100 successive daily injections of approximately 350 rat units.

INHIBITION OF UTERINE BLEEDING BY MEANS OF ŒSTRIN

Ovulation normally occurs about the middle of the menstrual cycle, and observation of the sexual-skin changes in several species of monkey suggested that the amount of œstrin becomes materially reduced after that event, and remains low until the end of the cycle.[6] In an attempt to test the œstrin-withdrawal theory of menstruation,[7] I consequently administered œstrone daily during eight cycles of a regularly menstruating monkey (*Cercocebus torquatus atys*), the daily dose varying between 250 and 1000 rat units (one rat unit being approximately equivalent to three international units).[8] In seven of the eight cycles injections were begun at some time between the 18th and the 29th days, and therefore after the mid-point of the cycle, and after ovulation had presumably occurred. This treatment did not disturb the menstrual rhythm. Injections were begun on the 12th day of the eighth cycle, presumably before ovulation had occurred, and before the formation of a corpus luteum; the subsequent menstruation was inhibited, the experiment ending on the 55th day, and before the next bleeding began. Histological study suggested that ovulation had been occurring regularly in the experimental animal until the last cycle, and the failure either to inhibit or delay bleeding in its first seven experimental cycles thus becomes explicable, in so far as in each of them the exogenous œstrone was presumably successfully opposed by the natural secretions of a corpus luteum. On the other hand, injections of œstrone were begun sufficiently early in the eighth cycle to inhibit ovulation; the endometrial action of the hormone was thus unopposed by that of progestin, and consequently the subsequent menstruation was inhibited. The experiment accordingly suggests that it should be possible to inhibit uterine bleeding if injections are given throughout the cycle.

This conclusion has been confirmed by further experiments I performed on two normal rhesus monkeys, and is also well borne out by the experiences of certain clinicians. For example, Kurzrok [9] found that prolonged injections of œstrin may stop menstruation in young patients with oligomenorrhœa. Four of five patients treated by Bowman and Bender [10] responded in the same way; Smith,[11] on the contrary, reported that the menstrual rhythm was unaffected in nine patients who received 200 to 600 rat units of œstrone daily by mouth. Undue weight should not, however, be placed on his finding, since the efficacy of the oral administration of œstrone is doubtful, and since in any case the doses he gave were well below the amounts now believed to be necessary for securing a full physiological effect on the human uterus. A recent investigation by Zondek [4] places the matter beyond doubt. Fifteen patients were injected, some in successive cycles, two or three times weekly with œstrone or œstradiol. Seventeen of the nineteen treatments of which details are given resulted in the delay of menstruation for periods varying between sixteen to seventy days, and on an average for approximately three weeks. The least amount necessary to delay menstruation is 70,000 mouse units, which, according to Zondek, is one-third the amount necessary to produce full proliferation of the endometrium. To ensure the delay (which is of no clinical importance), a total of 200,000 to 300,000 mouse units needs to be injected. Zondek gave 10,000 to 50,000 mouse units per injection, and the patients who underwent the treatment showed considerable individual variation in their responses. Thus there appeared to be no relation between the amount of œstrogenic substance injected and the length of time menstruation was delayed, while the period intervening between the last injection and the onset of bleeding was altogether variable.

According to Zondek, the earlier in the cycle injections are begun the greater is the likelihood that menstruation will be inhibited, and he suggests that far greater doses are necessary to produce the delay if injections are begun in the premenstrual phase. Actually, according to his records, injections were begun in the premenstrual phase in but three cases, and only the data relating to one of these shows that uterine bleeding was delayed beyond the time of its expected onset. There is no evidence, however, that the patient in question had ovulated in this cycle. The data for the other two cases are of no consequence for the issue under discussion owing to the performance of curettage about the 28th days of the cycles. It is unfortunate that clinical data on this point are unavailable, for while the direction of Zondek's views on this matter agrees with the experimental evidence, his own records are inadequate to prove that œstrin can, in fact, inhibit menstruation if its administration is begun during the life of a corpus luteum. Hisaw [5] has made a significant observation bearing on this question. It has already been pointed out that the injection of œstrin after bilateral ovariectomy will usually inhibit the uterine bleeding that normally follows the operation. When, however, ovariectomy is performed in the latter half of the cycle, at a time a functional corpus luteum is present, large doses of œstrin are unable to inhibit the post-operative "menstruation." "As the endometrium is modified towards the premenstrual condition," writes Hisaw, "it becomes progressively more difficult to prevent degeneration by the injection of œstrin following castration and consequent corporin (progestin) removal." This view on the relations of œstrin and progestin is supported by a number of other observations made on castrated monkeys, and in the circumstances it is advisable to reserve judgment on the question of the capacity of œstrin to inhibit or delay menstruation when its administration is begun during the premenstrual phase of a cycle in which ovulation has occurred.

The evidence thus far considered points to the definite conclusion that the menstrual rhythm can be disturbed in regularly menstruating and ovulating individuals, and the onset of menstruation deferred, if the administration of œstrone in adequate amounts is begun in the earlier half of the cycle. Consequently it becomes necessary to examine

Corner's interpretation of thirteen experiments he performed on rhesus monkeys, experiments which according to him showed that the administration of œstrone is never in itself sufficient to prevent the onset of an ensuing menstruation.[12]

The animals which were the subjects of these experiments were injected subcutaneously and three times weekly for varying periods up to 119 days with either a benzoic acid ester of œstrone (keto-hydroxy-œstrin), or with the mono-benzoic ester of œstradiol (di-hydroxy-œstrin). Corner bases his interpretation on the fact that the first expected menstrual period was not delayed in twelve of the thirteen experiments. Almost all the animals experienced a subsequent delay in the onset of the later periods which should have occurred during the course of injections. This fact Corner regarded as insignificant from the point of view of the formulation of hypotheses on the endocrine relationships of the menstrual cycle, since, as he points out, the prolonged administration of œstrin acts adversely on the anterior lobe of the pituitary, and the pituitary-ovarian relationship consequently may be disturbed. That the data are amenable to another interpretation becomes evident when they are arranged as they are in the Table.

Effect of Continuous Injections of Œstrin on the Menstrual Rhythm of Rhesus Monkeys

Expt.	Day of cycle injections started.	Duration in days (d.) and dose (rat units).	First expected bleeding.	Subsequent history.
102	29	30 for 24 d. 60 for next 84 d.	No delay.	No disturbance.
105	25	30 for 40 d. 60 for next 79 d.	,,	No disturbance succeeding cycle, then amenorrhœa.
57·2	24	90 for 92 d.	,,	Continuous am.
70·2	21	30 for 17 d.	,,	—
85·1	19	12 for 5 d. 16 for next 26 d. 30 ,, 57 d.	,,	S.c. prolonged 5 wks., then bleeding.
85·2	18	60 for 94 d.	,,	S.c. (2) prolonged 2 and 2½ wks.
64	16	30 for 48 d.	,,	S.c. prolonged 2 wks.
106	13	30 for 45 d.	Delay.	Continuous am.
90·2	12	90 for 98 d.	No delay.	S.c. (2) prolonged 6 and 17 days.
90·1	11	12 for 5 d. 16 for next 26 d. 30 ,, 53 d.	,,	S.c. prolonged 6 wks., then bleeding.
70·1	9	13·3 for 9 d. 16 for next 26 d. 30 ,, 60 d.	,,	S.c. prolonged 4 wks., then bleeding.
66	8	13·2 for 16 d. 15 for next 8 d. 29 ,, 30 d. 30 ,, 44 d.	Equivocal.	S.c. prolonged 4 wks., then bleeding.
57·1	8	13·3 for 8 d. 16·3 for next 11 d. 29 ,, 29 d. 30 ,, 39 d.	No delay.	S.c. prolonged 3 wks., then bleeding.

S.c. = succeeding cycles; am. = amenorrhœa.

Data from protocols of experiments by Corner.[12] The last column gives the history of the first and later cycles following the first menses that occurred after the start of the experiment. Reference to "bleeding" indicates bleeding during the course of injections.

It will be seen that in no instance in which injections were begun after the 16th day of the cycle—i.e., after its mid-point—was there any delay in the subsequent appearance of the next bleeding. This finding agrees with the conclusion suggested by the other data already considered. On the other hand, there was a continuous period of amenorrhœa throughout the course of injections in one of the six experiments (106) in which the administration of œstrin was begun during the first half of the cycle. In a second of these experiments (66), overt bleeding did not occur at the time of the expected onset of the first menstruation (though a few red blood-cells were seen in the vaginal washings), and in the remaining four it appears likely that the lack of any delay in the onset of the first bleeding was due to the low dosage of œstrin employed. In three of these experiments the amount administered was usually less, and never more, than thirty rat units daily, which on the accepted relationship of rat to international units [8] amounts to ninety, or fewer, international units per day. In my own experience, such an amount injected daily for fourteen days † is as likely to prove inadequate as adequate to influence the endometrium of a castrated rhesus monkey sufficiently for the cessation of injections to be succeeded by uterine bleeding, and even the equivalent of ninety rat units—the most given by Corner—has been found to constitute a threshold dose in certain circumstances.

The continued injection of œstrin after the first phase of uterine bleeding resulted, in all except one of Corner's thirteen experiments, either in prolonged amenorrhœa or in considerable delay in the onset of the succeeding menstrual periods. This effect can clearly be related, in the light of the other data considered above, to the continuous injection of œstrin *throughout* the second and subsequent cycles. And the fact that prolonged amenorrhœa was not provoked in all the animals is explicable on the view that in almost all the experiments the dosage employed was unduly small. Corner's findings do not thus conflict with the conclusion that the continuous injection of adequate amounts of œstrin will inhibit menstruation.

At the close of his experiments Corner examined the ovaries of his animals, and discovered that none contained a recent corpus luteum. This finding provides strong support for the view, already formulated, that œstrin, when its continuous administration in adequate dosage is begun in the earlier half of a cycle, delays the onset of menstrual bleeding, because, by inhibiting ovulation, it also inhibits the formation of a corpus luteum, the activity of whose secretions would over-ride its own. In view of Corner's rich findings on this point, one may reject a suggestion made by Kurzrok and his co-workers [13] that the amenorrhœa which in women can follow the injection of œstrin is due to luteinisation of the ovaries.

INDUCTION OF UTERINE BLEEDING BY MEANS OF ŒSTRIN

Until 1933 it was generally accepted that uterine bleeding is not a positive effect of the action of œstrin on the endometrium, but a negative one which follows the cessation of the hormone's action. In that year Werner and Collier [14] published the results of a clinical investigation of the effects of œstrone on ovariectomised women, and the data they presented suggested that uterine bleeding can in fact occur not only after but also during the course of œstrin injections. Further data that have been

† An "interval" endometrium is normally produced by the œstrin elaborated in an intact animal within the first fourteen days of a menstrual cycle; hence this interval of time was chosen for the period of injections in the experiments to which I am referring.

regarded as pointing to the same conclusion have been published by Kaufmann,[15] Hisaw,[5] and Engle and Smith.[5] If the facts have been correctly interpreted, it is clear that either (*a*) this conclusion conflicts with the one already considered (viz., that œstrin in proper dosage inhibits the occurrence of menstruation), or (*b*) that the action of œstrin on the uterus is variable and unpredictable. The problem is of great importance both from the point of view of theory and therapy, and in the circumstances the data bearing on it need to be closely examined.

The first patients treated by Werner and Collier were five in number.[14] It was assumed that all had had both ovaries previously removed, but from the details published it is permissible to entertain some doubt on this point in the case of one who menstruated regularly for six months following the operation.

In the first 28-day period of the investigation each woman was given, by intramuscular injection, 200 rat units of œstrone daily, in the second 28-day period 300 R.U., and in the third 28-day period 400 R.U. One patient (Case 2) neither bled during nor after the course of the injections, and although no operative record was available, it was decided, after physical examination, that a supracervical hysterectomy as well as a bilateral salpingo-ovariectomy had been previously performed on her. In a second patient (Case 5), who is stated to have bled twice during the course of the injections, uterine bleeding was negligible, amounting in both instances to a few spots of blood. The observation of bleeding was made on the third patient (Case 4) during the course of a curettage. The fourth patient (Case 3) bled slightly five days after the start of injections and a curettage, again six days later, four days after a second curettage, and again twenty-one days later, eleven days after a third curettage. The history of the fifth patient (Case 1) closely resembles that of the fourth.

In their second investigation,[16] Werner and Collier treated eight ovariectomised women, but this time employed smaller doses.

Each course of injections lasted 91 days. The first patient, who was given 200 R.U. daily, bled only once during the treatment, and then on the sixth day of the course, six days following a curettage. The second patient, who was given increasing amounts of œstrone up to 400 R.U. daily, never bled at all. The third, who received 200 R.U. on alternate days only, bled four times, on each occasion for one day only, and twice within a week following a curettage. The fourth patient, whose œstrin treatment was the same as the third, bled for one day only during the course of the injections, and then five days after a curettage. Indeed it is legitimate to doubt if this patient "menstruated" at all. She was unaware of having done so, and the observation depends on the fact that "a cotton-tipped applicator introduced into the cervical canal was soiled with blood." The fifth patient, who received only 100 R.U. daily, neither bled during nor after the treatment, while the sixth, who was given the same treatment, bled slightly and for one day only on each of three occasions, one of which was within a week of a curettage. The seventh and eighth patients each received 100 R.U. on alternate days. The former bled scantily on two separate days and "freely" on another, but on each occasion within a week of a curettage; while the eighth patient bled freely on four occasions, the first occurring within a week of the start of injections and a curettage, the second five days after a second curettage, the third two days after another curettage, and the fourth three days after a final curettage.

Before considering these facts further it is advisable to refer to the other published records which have also been regarded as indicating that uterine bleeding is stimulated by œstrone during the course of its continuous injection.

The observations of Kaufmann referred to in support of this view were made during the treatment of non-ovariectomised patients suffering mainly from primary amenorrhœa. According to Kaufmann, "only slight hæmorrhages of short duration" occurred during the course of the treatment. The dosage employed was usually 100,000 mouse units per week, given either in one or two injections in the form of a benzoate of œstrone.‡ The observations of Hisaw used in support of the view under consideration were made on two castrated rhesus monkeys, one of which bled on the 40th day of a course of injections of 40 rat units daily, and the second of which bled for 8 days, beginning on the 29th day, during a course of injections of 80 rat units daily. Engle and Smith's observations were also made on castrated rhesus monkeys, which were being injected daily either subcutaneously or intramuscularly with an oil solution of œstrone. One of their animals, injected for 80 days, bled once when on 200 R.U. daily, and again when on 300 R.U. Another, injected for 110 days, bled once when on 200 R.U.; and a third monkey, injected for 170 days, bled once when on 300 R.U. and twice when on 400 R.U.

Three questions need to be considered in the examination of these data: (*a*) was the œstrone given daily in greater than threshold doses; (*b*) was the injected hormone adequately absorbed; and (*c*) were the injections given in quick enough succession? Unless these conditions were fulfilled, the investigations in question can form no basis for new views on the action of œstrone.

Werner and Collier's investigation undoubtedly did not fulfil these conditions. It is accepted now that some 200,000 mouse units (said by Kaufmann to be equivalent to 40,000 rat units or 1,000,000 international units) are required to promote full follicular proliferation of the endometrium within two weeks. These figures of Kaufmann are upheld by both Kurzrok and Zondek. 400 R.U. was the highest dose given at any time by Werner and Collier, and over a fortnight such a daily dose amounts to no more than 5600 R.U. Experiments on monkeys show that uterine bleeding will generally occur during the course of continuous injections if the daily dose of œstrone falls below a certain threshold value (for most monkeys in the region of 150 I.U.,[17] see below), and it is likely that the occurrence of bleeding in Werner and Collier's investigation was generally due to similar circumstances. The presumption does not, however, seem a safe one, for it is difficult to escape the conviction that there was usually some close time-relation between the phases of transitory bleeding and the frequent operations of curettage. In either case, Werner and Collier's investigation fails to justify the interpretation under discussion.

Kaufmann's data also seem to be deficient from this point of view. The patients treated were non-castrated women suffering from amenorrhœa, and it is in the first place conceivable that ovarian influences were in some way concerned in the phases of slight bleeding that did occur. In the second place it has to be remembered that Kaufmann's patients were injected only once or at most twice weekly. The benzoated preparations used have an undoubtedly more prolonged effect than œstrone itself, but in the absence of any contrary knowledge, the possibility must be considered that the concentration of œstrogen in the body fluids sinks greatly between successive doses at either weekly or bi-weekly intervals. And on the basis of experimental work on monkeys, uterine bleeding is to be expected if the œstrin-concentration sinks to and remains at a sub-threshold level for more than a few days.[18]

‡ It is difficult to understand the relation between these figures, given in a German publication,[15] and the dosage in international units given by Kaufmann in a paper published in this country.[4] Consequently the earlier figures are quoted here.

In the circumstances, it is unjustifiable to interpret Kaufmann's data as showing that the uterine bleeding which his patients experienced during the course of treatment was due to some as yet unknown direct action of œstrone.

Hisaw's data are also insufficiently strong to permit this conclusion, for the possibility that his two monkeys were being injected with threshold doses of œstrone cannot be excluded. I have already referred to my own experimental findings regarding threshold doses of œstrone for castrated rhesus monkeys, when the criterion of "threshold" is the hormone's capacity to cause enough endometrial change in fourteen days for uterine bleeding to succeed the cessation of injections. Another series of experiments on the same species suggests strongly that uterine bleeding occurs during the course of continuous œstrone injections only when the quantity of hormone given daily is in the region of a threshold value (generally about 150 I.U.).

Thus none of three monkeys injected daily for forty days bled until after the cessation of injections, when the lowest daily dose was 300 I.U. Bleeding occurred during only one of eight similar courses of injections in which 200 I.U. was the lowest daily dose. The animal that bled when on 200 I.U. also bled in another experiment when on 250 I.U.; it failed to bleed, however, during forty days of a course of injections in which 300 I.U. was the lowest daily dose. On the other hand bleeding occurred during all except three of seventeen courses of injections (using nine different castrated rhesus monkeys) in which the lowest daily dose varied between 175 and 50 I.U. (two animals failed to bleed when on 150 I.U., and one when on 100 I.U.).

The fact that bleeding occurs during continuous œstrone injections only when the amount given daily is a threshold or sub-threshold dose is brought out even more clearly by the following two experiments. One monkey has never bled in the course of 220 days during which it has been given 1000 I.U. of œstrone daily; another, on 100 I.U. daily, bled between the 48th and 52nd days of a course of injections which has thus far lasted 89 days. In the light of these facts, and in view of the accepted relationship between rat and international units, it is plain that a reasonable interpretation of Hisaw's two experiments is that his monkeys were being injected with threshold doses of œstrone.

Such an interpretation cannot apply to Engle and Smith's observations, since the least amount of œstrone given their animals daily was 200 rat units in oil. It was found at post-mortem, however, that the subcutaneous spaces of their animals "held great quantities of the oil," and in view of this fact, and Deanesly and Parkes' findings regarding the absorption of oil solutions of œstrone when injected subcutaneously,[19] it seems reasonable to doubt whether the hormone was being utilised at the rate it was being injected. In the circumstances it seems idle to speculate about the cause of the bleeding experienced by Engle and Smith's animals. The bleeding may have been an active effect of œstrone, but it may equally well have been due to its inadequate absorption.

It thus appears that the data which have been widely interpreted as showing that uterine bleeding is stimulated, as a direct effect of the hormone, during the course of œstrone injections, are insufficient to justify this conclusion. On the contrary, most of the available facts are amenable to interpretation in terms of the established finding that uterine bleeding occurs only when the level of œstrone falls below a threshold value. There can be little doubt that the present acceptance of the view that œstrone during its administration normally and actively stimulates uterine bleeding is unjustifiable, and that where it is used as a step in argument, it can only help to lead to hypotheses of the nature of the menstrual cycle (e.g., Robson and Henderson [20]), which do not agree with the facts about the cycle derived from the experimental study of primates.

CONCLUSIONS

(1) Œstrin, when administered in adequate amounts throughout the menstrual cycle, delays the onset of the next menstruation. (2) Uterine bleeding will not occur during the course of daily injections of adequate amounts of œstrone either in normal or castrated subjects. It may occur if the daily dosage is of threshold or sub-threshold value, if the injections are too widely spaced, or if the absorption of the hormone is imperfect. (3) The available evidence does not suggest that œstrin actively stimulates uterine bleeding, but still favours the view that bleeding is an event which marks the cessation of the hormone's action.

REFERENCES

1. Allen, E.: Contr. Embryol., Washington, 1927, xix., 1.
2. Wolfe, J. M., Campbell, M., and Burch, J. C.: Proc. Soc. Exp. Biol., N.Y., 1932, xxix., 1263; Parkes, A. S.: THE LANCET, 1935, i., 485.
3. Zuckerman, S., and Morse, A. H.: Surg., Gyn., and Obst., 1935, lxi., 15.
4. Kaufmann, C.: Proc. Roy. Soc. Med., 1934, xxvii., 849; Zondek, B.: Wien. klin. Woch., 1936, xlix., 455.
5. Hisaw, F. L.: Amer. Jour. Obst. and Gyn., 1935, xxix., 638; Engle, E. T., and Smith, P. E.: Anat. Rec., 1935, lxi., 471.
6. Zuckerman, S.: Proc. Zool. Soc., London, 1930, p. 691.
7. ,, ,, : Proc. Roy. Soc. B., 1935, cxviii., 13.
8. Memorandum on the International Standard for the Œstrus-producing Hormone, 1933.
9. Kurzrok, R.: Endocrinology, 1932, xvi., 361.
10. Bowman, K. M., and Bender, L.: Amer. Jour. Psychiat., 1932, xi., 867.
11. Smith, G. van S.: Quoted from Corner (ref. 12).
12. Corner, G. W.: Amer. Jour. Physiol., 1935, cxiii., 238.
13. Kurzrok, R., Wilson, L., and Cassidy, M. A.: Amer. Jour. Obst. and Gyn., 1935, xxix., 771.
14. Werner, A. A., and Collier, W. D.: Jour. Amer. Med. Assoc., 1933, c., 633.
15. Kaufmann, C.: Klin. Woch., 1933, xii., 1557.
16. Werner, A. A., and Collier, W. D.: Jour. Amer. Med. Assoc., 1933, ci., 1466.
17. Zuckerman, S.: Jour. Physiol., 1936, lxxxvi., 31 P.
18. ,, ,, : Ibid., 1936, lxxxvii.
19. Deanesly, R., and Parkes, A. S.: Ibid., 1933, lxxviii., 155.
20. Robson, J. M., and Henderson, W. R.: Proc. Roy. Soc. B., 1936, cxx., 1.

PUSTULAR PSORIASIS

REVIEW OF THIRTY-TWO CASES*

BY JOHN T. INGRAM, M.D., F.R.C.P. Lond.

PHYSICIAN FOR DISEASES OF THE SKIN, THE GENERAL INFIRMARY, LEEDS

THE essential features in the diagnosis of pustular psoriasis are the pin-head-sized lakes of pus which dry to brown macules and are associated with scaling and erythema and often a red glazed skin on the palms and soles. It is common for these features to be present on and between the digits and particularly round the nails whence the affection may spread gradually along finger or toe, the great toes and thumbs being commonly affected. Less often these characteristics are found elsewhere on the body, limbs, or trunk, but rarely are the hands and feet unaffected.

The pustules are sterile on bacteriological examination, or grow a few colonies of *Staphylococcus albus* or *aureus* which do not appear to have pathological

* Read at the ninth International Dermatological Congress at Budapest, 1935.

significance, and histologically the epidermal and dermal changes closely resemble those seen in psoriasis except that subcorneous abscesses which pass into the scales and crusts are present. Pricking, burning, or itching may be experienced.

In reviewing cases which I have classified as pustular psoriasis during the past five years I have disregarded all which failed to present these features. Though the diagnostic criteria are identical throughout I will consider my 32 cases in two groups.

GROUP ASSOCIATED WITH ORDINARY PSORIASIS

In the first group the pustular condition was part—or was at least an episode in a career—of ordinary undoubted psoriasis. All these patients, 13 out of 32, had had typical, unquestionable psoriasis for years, of a chronic or relapsing type and had such psoriasis when they presented pustular lesions. One patient had a twin sister, and one a mother, suffering from psoriasis. In most cases the psoriasis was of a particularly obstinate and intractable form and in 3 cases a pustular phase was undoubtedly provoked by too vigorous treatment on that account.

The pustular phase, in more than half the cases, was associated with an acute exacerbation of the psoriasis accompanying a phase of temporary ill-health. This was shown by the characteristics of the eruption and the development of symptoms of discomfort and irritability—sometimes a frank nervous breakdown. An admixture of an acute psoriasis with an eczematous reaction was suggested but could not be demonstrated clinically or histologically.

In 2 cases the psoriasis was associated with an acute seborrhœic psoriasis of flexures and in 4 there was acute septic infection of mouth or throat associated with some pyrexia and apparently provocative of the pustular phase. While in 6 of the cases the pustular manifestations were confined to the hands and feet, in the remaining 7, patches of pustular psoriasis were seen on elbows, knees, arms, and legs and occasionally on the trunk. In 1 case the condition passed into a generalised pustular eruption which persisted for years over the whole body, when the original condition of psoriasis could not be recognised. Another persists as a generalised exfoliative dermatitis with pustules.

The association of rheumatic manifestations in muscles, nerves, and joints appeared to be relatively common—4 of the 12 cases.

My experience is that where the affection is not generalised the pustular phase of psoriasis often clears readily with rest and simple medications though the general psoriasis is of the stubborn variety and pustular phases will relapse. It seems a reasonable conception to view psoriasis, particularly in the more acute and exudative phases presenting these pustular lesions, in the light of the dry abscesses of Munro of ordinary psoriasis and I believe that in the stubborn type of psoriasis this condition is not uncommonly provoked by external irritation, by constitutional ill-health, particularly nervous, and by septic focal infection, particularly in the mouth. It may be borne in mind that psoriasis of the acute, generalised, guttate type is a common reaction to throat infections, as is a vesico-pustular eruption of hands and feet. It may be that pustular psoriasis is a combination of these reactions. I cannot but think that the acute pustular and the dry rupioid types of keratodermia blenorrhagica are manifestations of pustular and ordinary psoriasis dependent upon toxæmia from a gonococcal focus of infection, though I confess that my experience of this disease is very limited.

GROUP OF CASES NOT ASSOCIATED WITH PSORIASIS

My second group of 20 cases is only distinguished from the first group by the absence of ordinary psoriasis elsewhere, or in the past history. In this group resistance to treatment is characteristic. In the early stages and attacks response, though slow, is often quite good, tar and X ray therapy being most effective, though both measures must be used with caution. In the later stages the condition tends to be very intractable. Symptoms are similar to those described with the previous group.

The patient described as Case 2 in my original paper[1] remained clear of eruption for four years, after which she relapsed with a typical and obstinate eruption of the soles and round the nails. The association with rheumatic manifestations, which was conspicuous in her case, is a common one.

A typical and completely resistant eruption of the whole of the soles and toes of a woman, aged twenty-nine, cleared during a single pregnancy but relapsed immediately afterwards and has persisted, apart from that, for the past ten years.

Of the 20 cases 3 were associated with mouth or throat sepsis of doubtful ætiological significance. Two of the cases affected only the thumb, after the fashion of dermatitis repens.

SEX- AND AGE-INCIDENCE

It has seemed to me that the condition is more common in females in late middle life. In the first group of 13 cases associated with psoriasis, 10 were females and 3 males, and 10 cases arose at or after forty-five years of age. One patient, the daughter of a psoriatic mother, started with ordinary and pustular psoriasis at the age of thirteen years, with the onset of menstruation. In the second group of 19 cases 12 were females and 7 males; 10 occurred after forty-five years of age and 9 between twenty-five and thirty-five. Taken together that is 22 female cases out of a total of 32 and in 20 cases the onset was at forty-five or later.

That the type of reaction described is not uncommon is manifest from what has been written on the subject. In using the term pustular psoriasis for this, it seems to me that difficulty of interpretation exists only if by psoriasis we mean a specific disease entity as opposed to a type reaction. To me psoriasis is a constitutional reaction like eczema and dependent upon the individual, not the exciting cause. The familial tendency, the common onset at puberty, its behaviour with pregnancy and the menopause, and the fact that it may be excited by a variety of external and internal traumata seem capable of no other interpretation.

It is accepted that psoriasis will overlap with seborrhœic reactions, with lichen planus, and occasionally with eczema—it is not entirely hard and fast in its limitations. Even the histology of psoriasis, though characteristic in a characteristic lesion, is not specific and many inflammations of the skin are psoriasiform in their histological features. It does not seem to me possible to hang any clinical entity, which is essentially a reaction of the skin and not a pathological affection, upon the single criterion of an absolute and invariable histological pattern. In my view the type of affection described here is no more than a reaction and in view of the tendency of many of its characteristics towards those of psoriasis and of the common occurrence of a similar affection with

[1] Ingram, J. T.: Brit. Jour. Derm. and Syph., 1930, xlii., 489.

undoubted psoriasis, I believe the nomenclature of pustular psoriasis to be a suitable one.

ADDENDUM

A case of interest which has occurred in my practice since I read this paper at Budapest deserves attention.

A male, aged 59, has been under my observation and care at intervals for the past six years for psoriasis of 45 years' duration. Every spring for the past 25 years he has had an attack of pompholyx of the hands which in my opinion has been an ordinary constitutional pompholyx in one of a nervously unstable temperament and appears to be unrelated to a chronic epidermophytosis of the feet.

In January of this year the patient was seriously indisposed with influenza for a period of about three weeks. A week after the onset of the influenza he developed a profuse, generalised, guttate psoriasis involving all parts of the body including dorsa of hands and feet and pustular on palms and soles.

The condition, which is shown in the accompanying illustration, was a good example of pustular psoriasis and was the most difficult part of the eruption to clear; but there could be no doubt that the whole condition was a mixed psoriasis and pompholyx (eczematous) reaction to the preceding acute infection and toxæmia.

RIGHT AND LEFT VENTRICULAR FAILURE

A STUDY OF CIRCULATION TIME AND VENOUS BLOOD PRESSURE

BY PAUL WOOD, M.B. Melb., M.R.C.P. Lond.

FIRST ASSISTANT, DEPARTMENT OF MEDICINE, BRITISH POSTGRADUATE MEDICAL SCHOOL, HAMMERSMITH HOSPITAL, LONDON

IN 1927 Blumgart and Weiss [1] investigated the time taken for blood to flow from the antecubital vein of one arm to the brachial artery of the other arm. They injected radium C into the vein and noted its arrival at any given point by means of a special detector. They found that the normal arm-to-arm time was 14–24 secs., and the average 18 secs. In a series of papers [1 2] they and their collaborators reported the results of their investigations with this method. The time was prolonged in all forms of heart failure and in myxœdema, and was shortened in thyrotoxicosis and in anæmia.

In 1928 Weiss, Robb, and Blumgart [4] introduced the histamine method. Histamine, in doses of 0·001 mg. per kilo of body-weight, was injected into the antecubital vein and the time taken for a flush to develop in the face. The average normal time was found to be 23 secs. This method is not wholly satisfactory, as some patients do not flush and in some the flush is difficult to see. In this country Bain [5] has recently reported his findings with the histamine method.

In 1934 Robb and Weiss [6] used a 2 per cent. solution of sodium cyanide, injecting 0·25–0·5 c.cm. according to the patient's weight. When the drug reached the carotid sinus a sharp inspiration occurred, so that the arm-to-carotid time could be measured with a stopwatch. The normal time was found to be 9–21 secs., and averaged 15·6 secs.

Winternitz,[7] in 1931, measured the arm-to-tongue circulation time by means of sodium dehydrocholate (Decholin) which, when injected intravenously in doses of 5 c.cm. of a 20 per cent. solution, produces a bitter taste when it reaches the capillaries of the tongue. He investigated the arm-to-tongue time in various pathological conditions, and came to conclusions similar to those of Blumgart and Weiss. Tarr, Oppenheimer, and Sager [8] repeated the work with decholin and found that the normal arm-to-tongue circulation time was 10–16 secs.

In 1933 Fishberg, Hitzig, and King [9] employed gluside in doses of 2·5 g. of soluble gluside dissolved in 2 c.cm. of sterile water. The end-point depends upon the appreciation by the patient of a sweet taste, so that it is the arm-to-tongue time which is measured. The normal time was found to lie between 9–16 secs.

Much work has been done with these and other substances, but little of importance has been added to the conclusions of Blumgart and Weiss, which were reviewed by Blumgart [2] in 1931.

The present investigation was carried out to determine if the measurements of pulmonary circulation time and of venous blood pressure would throw light on the variations in the clinical manifestations of heart failure.

METHOD

Arm-to-tongue circulation time.—Sodium cyanide was first used according to the method of Robb and Weiss,[6] but was found to be unsatisfactory. Too small a dose gave no reaction, while too large a dose produced alarming respiratory embarrassment. The correct dose could not be calculated accurately, though it is roughly proportional to the body-weight, and if the dose was insufficient the end-point was not sharp. When the correct dose was administered the result was satisfactory. In ten normal male controls aged 17–46 (average 35) the arm-to-carotid circulation time was found to be 13–19·5 secs., averaging 15·75 secs.; the dose varied from 0·35 to 0·5 c.cm. of 2 per cent. sodium cyanide.

Owing to the difficulty of dosage sodium cyanide was discarded in favour of decholin. The disadvantage of the decholin method is that the end-point is subjective, so that the coöperation of the patient is essential.

The dose was 5 c.cm. of a 20 per cent. solution, and took 2–3 secs. to inject through a wide bore needle. The patients were always propped up at 45° because a sitting posture had to be adopted by orthopnœic cases. The shoulder and arm were bared to avoid constriction of veins above the site of injection. A local anæsthetic was used to avoid tachycardia from the pain which might be produced by the insertion of a wide bore needle. It made no appreciable difference which arm was used, but the right arm was used for choice, and was supported on pillows well away from the body. The patient was instructed to raise the left hand smartly the instant he noticed a peculiar taste under the tongue, care being taken to assure him that there would be no unpleasant

effects. The pulse-rate was compared with that on the chart, and tachycardia due to excitement was allowed to settle down before the injection was given. The time taken from the commencement of the injection of decholin into the antecubital vein to its arrival in the tongue was registered on a stopwatch.

Venous blood pressure.—The systemic venous blood pressure was measured by the direct method.[20]

The patient was propped up at 45° and the right arm supported on pillows well away from the body, the muscles being relaxed and the shoulder and arm bared. A local anæsthetic was employed. A short bevelled 1 mm. bore needle was attached to the horizontal arm of an L-shaped graduated glass tube of 3 mm. bore by means of a short piece of rubber tubing. This simple apparatus was sterilised before use. To prevent clotting, a quantity of 3·8 per cent. sodium citrate was run through the system immediately before inserting the needle into the antecubital vein. The venous blood pressure was measured from the level of the fourth intercostal space with the patient inclined at 45°. This level cuts the superior vena cava a little above its junction with the right auricle and is an entirely arbitrary reference point, but according to the work of Clark, Hooker, and Weed,[11] it is probably more correct than the right auricular level. As soon as the needle is in the vein, blood rises in the graduated glass tube, and when it comes to rest the height of the column is read off on the scale. Slight oscillations are usually seen, owing to the effect of respiration. The upper arm is then compressed and the column of blood promptly rises. On decompression it falls to its previous level or to within 1–2 cm. of it. If the discrepancy between the two readings is more than 2 cm. the system is not free and the readings must be discarded as false. Quick flow, respiratory oscillations, and close approximation of the up and down readings are good evidence of a free system.

RESULTS

Normal controls.—There were 25 subjects aged 19–70. The arm-to-tongue circulation time was 9·5–18 secs. (average 13·5 secs.). Neither age nor sex influenced the result. The systemic venous blood pressure ranged between 2 and 10·5 cm. of blood (average 5·75 cm.). These findings agree closely with those of other workers—e.g., Tarr, Oppenheimer, and Sager,[8] and Taylor, Thomas, and Schleiter.[12]

Heart disease.—There were 93 cases of heart disease investigated, and they were divided into three main groups:—

Group I. *Cases without clinical evidence of heart failure.*—There were 51 patients with the following diagnoses: mitral stenosis (12), bronchitis and emphysema (7), hypertensive heart disease (12), angina pectoris (7), myocardial infarction (7), aortic incompetence (5), myxœdema (5), miscellaneous (3). The arm-to-tongue circulation time, ranging from 8·5 to 19·0 secs., with an average of 14·4 secs., and the systemic venous blood pressure (2·5–10·5 cm., average 7·0 cm.) were normal in all cases except in those of myxœdema, in which the arm-to-tongue circulation time was slightly prolonged (18–23·5 secs., average 21·1; basal metabolic rate −13 per cent. to −35 per cent.).

Group II. *Cases with clinical evidence of systemic venous engorgement, enlargement of the liver, and dropsy.*—There were 19 cases in this group: mitral stenosis (9), heart failure secondary to emphysema (5), hypertensive heart disease (2), aortic incompetence (2), chronic constrictive pericarditis (1).

The arm-to-tongue circulation time and the venous blood pressure were increased in all instances. The arm-to-tongue time was 19–42 secs. (average 25·8 secs.), and the venous blood pressure to 9·5–28·5 cm. of blood (average 15·6 cm.). The cases of hypertensive heart disease and of aortic incompetence had been seen previously when they were free from systemic congestion but suffered from orthopnœa, and at that time their venous blood pressures were normal, though their arm-to-tongue circulation times were prolonged. These 4 cases may therefore be regarded as the later stages of the condition to be described in Group III. The majority of cases in Group II. were of mitral stenosis and of heart failure secondary to emphysema, in both of which the burden falls upon the right ventricle.

Group III. *Cases with orthopnœa and clinical evidence of pulmonary congestion, without signs of systemic venous engorgement, enlargement of the liver, or appreciable dropsy.*—In this group 16 out of the 23 patients had paroxysmal cardiac dyspnœa; there were 14 cases of hypertensive heart disease, 7 of syphilitic aortic incompetence, and 2 of mitral stenosis. Clinical evidence of pulmonary congestion was based on the constant finding of pulmonary basal râles. The 2 cases of mitral stenosis were first seen with systemic venous engorgement, enlargement of the liver, and dropsy, when the venous blood pressure was high, but they responded well to treatment and finally had signs of pulmonary congestion and orthopnœa only. It should be noted that in the other 21 cases the burden fell upon the left ventricle. The arm-to-tongue circulation time ranged between 19 and 47·5 secs. (average 30 secs.). The systemic venous blood pressure was normal as a rule, but it was slightly raised in 3 cases of hypertensive heart disease (11·5, 11·5, and 12·5 cm.).

DISCUSSION

Blumgart and Weiss[1] showed that, in cases of syphilitic aortic incompetence, when the venous blood pressure was normal, slowing of the arm-to-arm circulation time took place within the pulmonary circuit, for the radium arrived at the right auricle in normal time. It is probable that in the presence of a normal systemic venous blood pressure and apart from cases of myxœdema and bradycardia, prolongation of the arm-to-tongue circulation time indicates dilatation and congestion of the pulmonary veins and capillaries.[2 19] When the venous blood pressure is high it is likely that some slowing occurs proximal to the tricuspid valve. It is fairly certain that, apart from local venous obstruction, a raised systemic venous blood pressure is direct evidence of systemic venous congestion.

If it is accepted that a prolonged arm-to-tongue circulation time indicates pulmonary congestion, and that a raised systemic venous blood pressure indicates systemic congestion, then the results of this investigation show that there are two forms of congestive heart failure, systemic and pulmonary, and that they are not necessarily associated.

Systemic congestive heart failure may be seen in its purest form when secondary to emphysema. There are signs of systemic venous engorgement, enlargement and tenderness of the liver, and dropsy; the venous blood pressure is always raised and the arm-to-tongue circulation time is slightly, but not grossly, prolonged in uncomplicated cases. Orthopnœa is the rule, cyanosis is moderate to extreme, but there is never paroxysmal cardiac dyspnœa, though true asthma is not uncommon. In severe cases hydrothorax and ascites may occur; the urine is much diminished in quantity and contains albumin. It is well known that emphysema may impose a singular burden upon the right ventricle, and the findings in this type of case fit in well with what would be expected from isolated failure of the right ventricle.

Heart failure with pulmonary congestion was commonly the result of hypertensive heart disease or of syphilitic aortic incompetence. In these cases there was no evidence of systemic venous engorgement, enlargement of the liver, or of dropsy, but in all instances there were râles at the bases of the lungs. Orthopnœa was invariable and paroxysmal cardiac dyspnœa was frequent; cyanosis was slight to moderate, and pallor was more noticeable; the systemic venous blood pressure was

normal, while the arm-to-tongue circulation time was always prolonged, sometimes grossly. Pulsus alternans and presystolic gallop rhythm sometimes occurred; the urine was not usually diminished in amount, but generally contained albumin. These findings suggest isolated left ventricular failure, and it is well known that both hypertension and aortic incompetence impose a heavy burden upon the left ventricle. In this group, if the patient lived long enough, he might later appear with evidence of systemic congestive heart failure with venous engorgement, enlargement of the liver, and dropsy; the venous pressure would then be raised but the arm-to-tongue circulation time was not materially altered. These cases represent a later stage of the disease and suggest that the right ventricle finally fails owing to the burden imposed upon it by failure of the left.

Mitral stenosis is more complicated, for the obstruction to the circulation occurs distal to the pulmonary veins and capillaries, but proximal to the left ventricle. The findings suggest, however, that there are three stages in the life-history of a case of mitral stenosis. In the first stage the pulmonary circulation time and the venous blood pressure are normal despite the complaint of dyspnœa on exertion and radiological evidence of dilatation of the left auricle and of the large pulmonary vessels. In the second stage the arm-to-tongue circulation time is prolonged, but there is no evidence of systemic venous engorgement, and the venous blood pressure is normal; orthopnœa is usual and paroxysmal cardiac dyspnœa may occur. The syndrome may depend upon a considerable degree of pulmonary congestion without failure of the right ventricle, and is therefore similar to the syndrome produced by heart failure with pulmonary congestion in hypertension and syphilitic aortic incompetence. The second stage appears to be quickly followed by the third stage, which is characterised by heart failure with systemic congestion. The arm-to-tongue circulation time is prolonged, but not more so than in the second stage, the venous blood pressure is raised, and there are the usual signs of systemic venous engorgement, enlargement of the liver, and dropsy. The mechanism of this third stage appears to be best explained by right ventricular failure, and it is well known that the right ventricle carries the burden of mitral stenosis.

Since commencing this work my attention has been drawn to a paper by Hitzig, King, and Fishberg[10] in 1935, in which they report very similar results in cases of hypertensive heart disease, of syphilitic aortic incompetence, and of myocardial infarction. They concluded that these cases, which were characterised by orthopnœa and pulmonary congestion without evidence of systemic congestion, were examples of failure of the left ventricle without failure of the right.

In 1933 Weiss and Robb,[14] in an investigation on "cardiac asthma," concluded, from clinical, radiological, vital capacity, venous pressure, and pulmonary circulation time studies, that in cases of "cardiac asthma" there was an increased amount of blood in the pulmonary circulation which they considered was due to isolated failure of the left ventricle.

Paul White[13] discussed the syndrome produced by failure of the left ventricle without failure of the right ventricle, and considered that it could be deduced from the following combination of findings: cardiac dyspnœa out of proportion to signs of systemic congestion, reduction of the vital capacity of the lungs, heavy root shadows radiologically, accentuation of the pulmonary second sound, "cardiac asthma," pulsus alternans, and proto-diastolic gallop rhythm.

In the work published in England there is scant mention of disproportionate failure of the two ventricles. Fraser,[17] however, in his 1927 Goulstonian lectures on cardiac dyspnœa, pointed out that paroxysmal dyspnœa usually occurred when the left ventricle was nearer the limit of its capacity than the right. He considered that pulmonary œdema might be brought about by an increased right ventricular output above the capacity of a straining left ventricle, and that the benefit derived from morphine resulted from diminished inspiratory efforts "so that the blood flow to the heart is lessened, and the muscle of the left ventricle will have a chance to recover sufficiently to re-establish the balance between right and left ventricular output."

The circulatory dynamics of heart failure have been recently and thoroughly reviewed by Harrison[18] in an excellent monograph in which he shows that the available evidence favours the view that the signs and symptoms of heart failure depend upon the congestion which develops in that part of the circulation immediately behind the chamber which first fails. This view was clearly enunciated by Hope[15] a century ago but fell into disrepute in this country largely owing to the work of Mackenzie.

If these conclusions can be accepted, heart failure with systemic congestion is synonymous with right ventricular failure, and heart failure with pulmonary congestion is synonymous with left ventricular failure, and the terms right and left ventricular failure are justified.

Before concluding there are two other minor points which deserve comment. First, an increased systemic venous blood pressure could nearly always be predicted by observing dilated cervical veins when the patient was propped up at 45°; and conversely, when these veins were not dilated but could be brought up by pressure with the finger on the root of the neck, the venous blood pressure was always under 12 cm. of blood. The value of measuring the venous blood pressure is therefore doubtful. Secondly, the fact that orthopnœa was invariable in the group with pulmonary congestion and no evidence of systemic congestion disfavours the theory, expressed by Ernstene and Blumgart[16] in 1930, that orthopnœa was dependent upon a raised systemic venous blood pressure, which was still further raised in the head in the recumbent position, thereby causing medullary congestion and interference with the circulation of the respiratory centre.

CONCLUSIONS

(1) The arm-to-tongue circulation time has been studied by means of decholin, and the systemic venous blood pressure has been measured by the direct method in 93 cases of heart disease.

(2) In 25 normal controls the arm-to-tongue circulation time was found to range between 9·5 and 18 secs., and averaged 13·5 secs., while the normal venous blood pressure was 2–10·5 cm. of blood and averaged 5·75 cm.

(3) Sodium cyanide was found to be less satisfactory than decholin for measuring the crude pulmonary circulation time owing to the difficulty of correct dosage, but may be of value when the coöperation of the patient is impossible. The normal arm-to-carotid circulation time was found to be 13–19·5 secs. in 10 normal controls, and averaged 15·7 secs.

(4) Both the arm-to-tongue circulation time and the venous blood pressure were within

normal limits in 46 cases of heart disease of various types in which there was no clinical evidence of heart failure. In 5 cases of myxœdema the arm-to-tongue circulation time was slightly prolonged.

(5) Cases with congestive heart failure may be divided into two main groups, those with systemic congestion and those with pulmonary congestion.

(6) Cases of heart failure resulting from emphysema and from mitral stenosis commonly produce systemic congestion; cases of heart failure dependent upon hypertension and upon aortic incompetence commonly produce pulmonary congestion.

(7) These conclusions are based on the assumption that a prolonged arm-to-tongue circulation time with a normal systemic venous blood pressure is evidence of pulmonary congestion, and that a raised systemic venous blood pressure is evidence of systemic congestion.

(8) Cases of mitral stenosis may have a prolonged arm-to-tongue circulation time with a normal systemic venous blood pressure, and cases of hypertensive heart disease and of aortic incompetence may show evidence of systemic congestion and a raised systemic venous blood pressure in the later stages.

(9) These results are evidence of disproportionate failure between the two ventricles, and the terms right and left ventricular failure are justified.

This work was carried out at the instigation of Prof. F. R. Fraser, whose help and advice have been invaluable, and to him I wish to express my thanks.

REFERENCES

1. Blumgart, H. L., and Weiss, S.: Jour. Clin. Invest., 1927, iv., 15, 149, 173, 199, 389, 399; 1928, v., 343, 379.
2. Blumgart, H. L.: Medicine, 1931, x., 1.
3. Blumgart, H. L., Gargill, S. L., and Gilligan, R. R.: Jour. Clin. Invest., 1930–31, ix., 69, 91, 679.
4. Weiss, S., Robb, G. P., and Blumgart, H. L.: Amer. Heart Jour., 1928–29, iv., 664.
5. Bain, C. W. C.: Quart. Jour. Med., 1934, xxvii., 237.
6. Robb, G. P., and Weiss, S.: Amer. Heart Jour., 1934, ix., 742.
7. Winternitz, M., Deutsch, J., and Brull, Z.: Med. Klin., 1931, xxvii., 986.
8. Tarr, L., Oppenheimer, B. S., and Sager, R. V.: Amer. Heart Jour., 1933, viii., 766.
9. Fishberg, A. M., Hitzig, W. M., and King, F. H.: Proc. Soc. Exper. Biol. and Med., 1933, xxx., 651.
10. Hitzig, W. M., King, F. H., and Fishberg, A. M.: Arch. Internal Med., 1935, lv., 112.
11. Clark, J. H., Hooker, D. R., and Weed, L. H.: Amer. Jour. Physiol., 1934, cix., 166.
12. Taylor, F. A., Thomas, A. B., and Schleiter, H. G.: Proc. Soc. Exper. Biol. and Med., 1930, xxvii., 867.
13. White, P. D.: Jour. Amer. Med. Assoc., 1933, c., 1093.
14. Weiss, S., and Robb, G. P.: Ibid., p. 1841.
15. Hope, J.: A Treatise on the Diseases of the Heart and Great Vessels, and on the Affections which may be Mistaken for Them, London, 1849.
16. Ernstene, A. C., and Blumgart, H. L.: Arch. Internal Med., 1930, xlv., 593.
17. Fraser, F. R.: THE LANCET, 1927, i., 643.
18. Harrison, T. R.: Failure of the Circulation, London, 1935.
19. Weiss, S.: Ann. Internal Med., 1931, v., 100.
20. Moritz, F., and v. Tabora, D.: Deut. Arch. f. Klin. Med., 1910, xcviii., 475.

TRICHOMONAS VAGINITIS

ITS INCIDENCE AND COEXISTENCE WITH GONOCOCCAL INFECTIONS

BY AMBROSE J. KING, M.B. Lond., F.R.C.S. Eng.

AND

W. NEVILLE MASCALL, M.A. Camb., M.R.C.S. Eng.

CHIEF ASSISTANT MEDICAL OFFICERS TO THE LONDON COUNTY COUNCIL (WHITECHAPEL) CLINIC; AND

I. N. ORPWOOD PRICE, M.R.C.S. Eng., D.P.H.

PATHOLOGIST TO THE CLINIC

IN recent years increasing interest has been directed to the causation and treatment of vaginal discharges and, as a consequence, much has been observed and written on the subject of the flagellate vaginal parasite, *Trichomonas vaginalis*. First described by Donne in 1837, this was for many years regarded as an incidental saprophyte of no pathogenic significance. Recently the constant presence of the organism in vaginal discharges which are obviously of infective origin has given rise to much speculation as to its rôle in the causation of the syndrome which, from the presence of the parasite, is termed trichomonas vaginitis.

The trichomonads are distributed throughout the animal kingdom and the available evidence points to the conclusion that each group is specific for its own particular host. It has been suggested that in man the parasites isolated from various regions such as the mouth, vagina, bladder, prostate, and intestine are specific for each of these localities, but the evidence for this is not convincing. At the same time there appears to be a good deal of support for the theory that vaginal infection occurs from the rectum by the custom of cleansing the anus from behind forwards.

Objections to the theory that the *Trichomonas vaginalis* is the cause of vaginitis are based on the facts that this organism is not infrequently to be found in the secretions of the apparently normal vagina, and that in the typical vaginitis, large numbers of bacteria of various kinds are found in association with the parasites. Jacoby and Der Brucke [1] consider that the trichomonas is a non-pathogenic invader of the normal vagina or of an already diseased vaginal tract. Hesseltine [2] believes that it is non-pathogenic and is merely a scavenger which feeds upon bacteria. He brings evidence to support the contention that the determining cause of vaginitis associated with the trichomonas is a non-hæmolytic streptococcus. This view is endorsed by Hibbert,[3] and by Allen, Jensen, and Wood,[4] the latter believing that symbiosis of streptococcus and parasite is responsible for the infection. While these theories are not universally accepted there is a considerable body of opinion which regards the *Trichomonas vaginalis* as pathogenic only in the presence of some determining factor, such as trauma, as in coitus, or the introduction of some other infection.

The majority of workers on this subject are agreed that it is uncommon to find the trichomonas and the gonococcus in association. Berkowitz [5] considers that the association seldom occurs but draws attention to the resemblance which these infections bear to gonorrhœa. He stresses the importance of differentiation. In 1933 Jacobs [6] stated that the two organisms were never present at the same time; but he has subsequently modified that opinion [7] and now believes that the association sometimes occurs. Stein [8] states that gonococci are rarely, if ever, associated with the trichomonas. So widely held are these views that most of the papers on the subject during the past few years make no reference to the possibility of a coincident gonococcal infection.

Bernstine [9] however, in a series of 132 cases of trichomonas vaginitis in pregnant women, found the gonococcus to be present in 24 (18·1 per cent.). He therefore concludes that it is not a rare occurrence to find this association. Graham and Collins [10] in a series of 46 cases found 15 with trichomonas vaginitis and in two of these the gonococcus was demonstrated in smears and cultures. Kleegman [11] has reported 1 case, in her series of 78, in which the association was proven.

The present paper is based upon a study of 300 female patients attending at the London County Council (Whitechapel) Clinic.

HISTORY

The one significant fact in the histories of our patients who were found to be suffering from trichomonas infestation was the frequency with which the onset of the characteristic symptoms followed sexual intercourse—usually after an interval of from three to ten days. In fact the incubation periods closely resembled those of typical gonococcal infections.

SYMPTOMS AND SIGNS

The symptom-complex in a severe case of this disease has characteristic features, but these are by no means present in all cases. As a general rule treatment is sought because of a profuse yellowish-white or greyish-brown—often malodorous—vaginal discharge which is often accompanied by irritation and a sensation of heat in the vulva. Occasionally there is dysuria or dyspareunia, particularly if the attack is of recent onset. In some cases discomfort in the pelvis or lower back may be present.

In the great majority of cases the discharge is thin. The *Trichomonas vaginalis* is rarely to be found in association with a thick tenacious mucoid discharge. The colour, which is usually a creamy-yellow, varies according to the amount of altered blood which the discharge contains. A fœtid odour is frequently noticed and is pathognomonic. Frothiness of the discharge is usually described, but in our experience it is by no means a constant feature. Intertrigo involving the upper and inner parts of the thighs and of the vulva may occur and marked hyperæmia of the nymphæ, the carunculæ myrtiformes, and the external urinary meatus are characteristic. The insertion of a vaginal speculum may cause severe pain in acute cases; and the vaginal mucous membrane may be seen to be acutely inflamed and bathed in purulent material, especially at the summit of the vaginal rugæ. The condition is most severe in the fornices, particularly the posterior fornix. In a case of some standing the vaginal walls may be studded throughout with minute granulations, especially in the fornices. The cervix uteri rarely shows the large acute erosion characteristic of an acute gonococcal cervicitis. Instead, the vaginal surface of the cervix is acutely congested; and if erosions are present, they are of the multiple pinhead type presenting a characteristic picture which is sometimes known as the "strawberry cervix." The cervical secretion may appear to be of the normal "egg-white" variety.

The picture which has been described is that seen in the severe type of case which, in our experience, is commonest among single girls or married nulliparæ. In our series all degrees of intensity were found, from the most acute to that in which the trichomonas was isolated in patients showing no symptoms or signs of infection.

DIAGNOSIS

The most suitable time to search for the trichomonas is just after the cessation of the menstrual period. Cases which are undergoing treatment and which are apparently free from the infection tend to relapse at this time, and it is then that the organism appears to be most plentiful.

The most accurate and satisfactory method of demonstrating it is to examine a fresh specimen of vaginal discharge under the 1/12 in. objective of the microscope. The method we have adopted is to obtain a platinum loopful of the discharge from the posterior vaginal fornix and to mix this with a loopful of normal saline on a microscopic slide. The specimen is then covered with a cover-glass and examined immediately. A very satisfactory view is obtained by the dark-ground method or with ordinary illumination after elimination of the peripheral rays by slight closure of the movable diaphragm. In most cases the characteristic features of the parasite can also be distinguished by the use of the 1/6 in. objective.

In the ordinary case the organism is at once evident owing to its remarkable activity and the characteristic nature of its movements. There are big variations of size and shape. The size may be seen to vary from 1½ to 2½ times the size of the pus cells. The shape is usually pyriform but is often oval. At the rounded end four very actively motile flagella are attached, and it is to the continuous activity of these that the organism owes its characteristic jerky movement. Extending from a point at the rounded end near the attachment of the flagella, down one side for one-half to three-quarters of the length of the organism, is the so-called "undulating membrane." This may show much activity, but is often difficult or impossible to distinguish. The pointed end terminates in a non-motile axostyle which can rarely be seen in fresh preparations. Goodall [12] has described three other rarer appearances of which we have twice seen the type which he describes as "the angler." Occasionally the organisms may be seen swimming freely; but unless the material has been well diluted they are usually entangled in the masses of leucocytes and vaginal epithelium, which are always to be seen in these specimens. The parasite may give the appearance of attempting to burrow into these masses. Another characteristic of these preparations is the very large number of bacteria which are present throughout each specimen. Frequently some of these bacteria appear to be within the cytoplasm of the trichomonas parasite. The characteristics of this organism may be studied by various staining methods, but the films cannot always be relied upon for certainty in diagnosis.

As regards differential diagnosis the importance of distinguishing these infections from those due to the gonococcus has always been emphasised. In the course of this investigation it became evident to us that the two infections were often in close association and that the attempt to draw a sharp line of distinction may result in errors of diagnosis: thus the trichomonas was found in cases which showed all the clinical characteristics of gonorrhœa; and the gonococcus was isolated in cases of typical trichomonas vaginitis.

ANALYSIS OF CASES

In the present series 300 female patients were examined at the London County Council (Whitechapel) Clinic. The majority complained of vaginal discharge or other symptoms of genital infection, but some were symptomless and attended at the request of consorts or because they feared the possibility of having acquired an infection. Others were referred from gynæcological clinics. Of the total, 172 (57·3 per cent.) were found to be suffering from gonorrhœal infection, whilst in 128 (42·7 per cent.) repeated tests failed to show the gonococcus. In every case the vaginal secretion was examined for the *Trichomonas vaginalis* and this organism was found to be present in 70 (23·3 per cent.) cases. In 5 of these 70 cases the trichomonas was not found at first examination but was discovered subsequently. Whether this was due to errors in technique, to subsequent infections, or to some temporary disappearance or metamorphosis of the parasite is not certain.

An analysis of the 70 cases in which the *Trichomonas vaginalis* was found shows that in 31 (44·4 per cent.) the gonococcus was isolated by smears or cultures or both, and was therefore present in addition to the trichomonas parasite. In 5 other cases (7·1 per cent.) there was a definite history of exposure to gonococcal infection, but repeated tests failed to show the presence of the gonococcus in association with the parasite. In 3 patients in whom the hymen was intact the gonococcus was not found. Table I. summarises these results:—

TABLE I

Type of case.	*T. vagin.* positive.	*T. vagin.* negative.	Total.
Gonococcal ..	31	141	172
Non-gonococcal ..	39	89	128
Total ..	70	230	300

Of the total cases examined 14 were pregnant, of which 6 were positive for *Trichomonas vaginalis*. Of the patients in whom it was found 41 were married women and 29 were single. In only 3 of the latter was the hymen intact. Nine patients did not complain of vaginal discharge or other symptoms but were examined owing to exposure to a possible risk of venereal infection. Out of the 70 patients 20 were definite contacts of gonorrhœal cases, the diagnosis having been proven in the consorts. Sexual intercourse was admitted by 57 patients. (Table II.)

TABLE II

Cases positive to Trichomonas vaginalis

		Per cent.
Married	41	(58·5)
Single	29	(41·4)
Virgo intacta	3	(4·2)
Definite gonococcal contacts	20	(28·5)
Intercourse admitted in	57	(81·4)
Symptomless cases	9	(12·8)

In the 31 cases in which the gonococcus and the *Trichomonas vaginalis* were associated the gonococcus was isolated in the situations shown in Table III.

TABLE III

Cases infected with trichomonas and gonococcus

			Per cent.
Urethra	(*a*) Smears	16	(51·6)
	(*b*) Cultures	21	(67·7)
Cervical canal	(*a*) Smears	15	(48·3)
	(*b*) Cultures	18	(58)
Vagina—by plate culture		9	(29)

The complement-fixation test for gonorrhœa was positive in the blood-serum in 18 cases (58 per cent.).

In the 70 cases secondary organisms were grown in vaginal plate cultures either separately or in combination as follows:—

Staphylococci	66	(94·2 per cent.)
Streptococci	39	(55·7 „)
Coliform bacilli	40	(57·1 „)

Our experiences in this investigation have convinced us that the presence of the trichomonas parasite adds considerably to the difficulties of isolating the gonococcus; but whether this is accounted for by the constant presence of vast numbers of secondary organisms or by the scavenging habits of the parasite is not clear. We suggest the possibility that the gonococcus may be a particularly vulnerable or a particularly tasty victim to the bacterial appetite of the trichomonas. Whatever the explanation may be it was often necessary to carry out several series of tests in these cases before the gonococcus could be isolated. In other cases, although gonorrhœa was strongly suspected, repeated tests failed to isolate the organism. In this connexion it is interesting to note that culture by the vaginal plate method [13] which, in our hands, has given a high proportion of satisfactory results in vaginitis uncomplicated by trichomonas infestation, was the least reliable of the various tests applied.

SUMMARY

In a series of 300 female patients attending for routine investigations at the Whitechapel Clinic the *Trichomonas vaginalis* was found to be present in 70. The majority of these showed the typical signs and symptoms of trichomonas infestation, but in a proportion the characteristic features were modified or absent. In 31 cases gonococcal infection and trichomonas infestation were coexistent. In 5 others with trichomonas infestation there was very strong presumptive evidence of gonococcal infection but the gonococcus was not isolated.

CONCLUSIONS

(1) The *Trichomonas vaginalis* parasite and the gonococcus are often present in association in infections of the lower female genital tract. (2) The presence of the parasite adds considerably to the difficulty of demonstrating the presence of the gonococcus by smear or cultural method. (3) The reason for this is not clear but it is suggested that the trichomonas, which is known to ingest and destroy surface bacteria, attacks and removes the gonococci from the surface secretions. (4) If the conception of the *Trichomonas vaginalis* as a non-pathogenic parasite which thrives on a previously damaged mucous membrane is correct, then this evidence suggests that in many cases the gonococcus may be the preliminary invader and damaging agent. (5) The facts that trichomonas infestation increased the difficulty of isolating the gonococcus, and that the gonococcus could not be isolated in some cases where there were the strongest reasons to suspect its presence, suggest that further improvement in the technique of methods of isolating the gonococcus may prove this association to be even more common.

Our acknowledgments are due to Dr. A. A. M. Reekie for carrying out a number of microscopic tests.

REFERENCES

1. Jacoby, A., and Der Brucke, M. G.: Amer. Jour. Surg., 1935, xxix., 414.
2. Hesseltine, H. C.: Amer. Jour. Obst. and Gyn., 1933, xxvi., 46.
3. Hibbert, G. F.: Ibid., 1933, xxv., 465.
4. Allen, E., Jensen, L. B., and Wood, I. H.: Ibid., 1935, xxx., 565.
5. Berkowitz, J. J.: New York State Jour. Med., 1933, xxxiii., 1328.
6. Jacobs, H.: Med. Jour. Australia, 1933, ii., 111.
7. „ „ : Ibid., 1935, ii., 101.
8. Stein, I. F.: Discussion (Hibbert), Amer. Jour. Obst. and Gyn., 1933, xxv., 471.
9. Bernstine, J. B.: Amer. Jour. Obst. and Gyn., 1934, xxvii., 746.
10. Graham, C. S., and Collins, E.: Med. Jour. Australia, 1934, ii., 416.
11. Kleegman, S.: Surg., Gyn., and Obst., 1930, li., 552.
12. Goodall, J. R.: (See Discussion, Allen, Jensen, and Wood), Amer. Jour. Obst. and Gyn., 1935, xxx., 738.
13. King, A. J., and Mascall, W. N.: THE LANCET, 1935, i., 1492.

QUEEN'S HOSPITAL, BIRMINGHAM.—The Lord Mayor of Birmingham has unveiled at this hospital three beds endowed from the proceeds of Birmingham University students' hospital carnival held last October. The Queen's Hospital has twenty beds endowed through the carnival and the General Hospital has nineteen beds.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF UROLOGY

AT the meeting of this section which took place on June 25th, with Mr. R. OGIER WARD, the president, in the chair, Mr. HUGH LETT read a paper on

Urinary Calculi

with special reference to stone in the bladder. Mr. Lett said that nearly the whole of urinary surgery had developed during his lifetime. It was in 1880 that Sir Henry Morris performed the first operation for the removal of stone. When Mr. Lett was house surgeon at London Hospital no case of stone in the ureter was admitted to the wards, and only 10 cases were seen there of stone in the kidney. In the 30 years, 1905–34 inclusive, 2781 cases of stone in the urinary tract were admitted to the hospital, about 1 per cent. of all surgical in-patients. Stone in the urinary tract was twice as common in men as in women. The sex-incidence varied considerably according to the situation of the stone; stone in the kidney was fairly evenly distributed between the two sexes, in the ureter the proportion was 353 males to 179 females, and the male sex showed a great preponderance of bladder stone. In women the commonest situation for stone was the kidney. Allowing for improved means of diagnosis, Mr. Lett was of the opinion that stone in adults is becoming more common, but his own figures showed a diminution in the frequency of stone in children, especially in the bladder and urethra. Of the 2781 cases of stone dealt with by Mr. Lett, 1568 were in the kidney, 532 in the ureter, 608 in the bladder, and 73 in the urethra. The distribution in the tract differed from that described by Mr. Swift Joly in a series of 636 cases admitted to St. Peter's Hospital during the years 1915–24, which was: renal 165, ureteric 32, vesical 371, urethral 34, prostatic 34. Mr. Lett thought the divergence might be explained by the fact that the London was a general hospital, and a patient suffering from vesical calculus correctly attributing his symptoms to the bladder would be likely to seek a special hospital such as St. Peter's. Symptoms of renal calculus did not necessarily suggest to the patient that he had stone in the kidney; he might think he had lumbago or intestinal disorder, and therefore would go to a general hospital.

Examination of urine.—Dr. P. N. Panton had supplied Mr. Lett with the results of the examination of the urine of 750 with stone in the urinary tract. The reaction of the urine was acid in about 72 per cent. of cases wherever in the tract the stone was situated, but the reaction might have been modified by other factors—e.g., previous medical treatment. A bacteriological examination was made in 636 cases, and in 73 of these (11·5 per cent.) the urine was sterile. *Staphylococcus albus* was present in 318, 50 per cent. of the cases examined; *B. coli* in 24 per cent., the streptococcus and *B. proteus* in 14 per cent. and 12 per cent. respectively. *S. aureus* was present in 16 cases. Often more than one organism was found. In simple bacteriological infections of the urinary tract it was unusual to find organisms of the *B. proteus* and *B. pyocyaneus* groups. The association of these bacilli with *B. coli* was always suggestive of some gross lesion, such as that produced by calculus, and they tended to disappear rapidly after the calculus had been removed. In this series the highest relative incidence of *B. proteus* occurred with stones in the lowest part of the tract. Where pus was found in the urine, *B. coli* was found in a far greater proportion of cases; in 212 cases of purulent urine the incidence of *B. coli* was equal to that of *Staph. albus*. Albumin was absent in only 18 of the 750 cases, the amount varying from a faint trace to a quarter of the volume or even more. Microscopically the most important findings in cases of stone were leucocytes, red cells, crystals, and excess of epithelial cells. Pus was present in 237 of the cases (or 31·6 per cent.); in most of these the stones were in the kidney or the bladder; 36 per cent. of the cases of vesical calculi, 34·7 per cent. of those of renal calculi, but only 16·4 per cent. of the cases of ureteral calculi had pus in the urine. Leucocytes were present in 431 of the remaining 513. In 16 of the cases in which pus was present the urine was found to be sterile. Although pus in sterile urine strongly suggested tuberculous disease of the kidney, it might be found also in cases of urinary calculus. Red blood-cells were found more often than was generally recognised. Crystals were found in 220 of the cases, mainly triple phosphates or calcium oxalate.

In *children* vesical calculus was now a very rare condition, especially in girls. In 1883 half the cases of stone in Guy's Hospital were in children, the incidence being then comparatively rare in elderly men of the hospital class; whereas among private patients comparatively few children were affected. Mr. Lett attributed the reduction of frequency of stone in children nowadays to improvement in the matters of food, clothing, and housing.

In 12 of Mr. Lett's cases stone had followed *prostatectomy*, and in 7 its presence seemed to be attributable to the operation performed in various parts of the country; in 4 of these the stone had developed in the prostatic bed. In all the cases following prostatectomy the patients had had frequency, difficulty in passing urine, and pain, the stream being poor and dribbling. In two cases the calculus was associated with a dense fibrous stricture at the entrance to the bladder. In one case the calculus formed out of the thread of the ligature which had been used at the operation.

The severity of the *pain* complained of by patients with stone varied very much; some complained of nothing more than a pricking at the end of micturition, others said the act caused them intense pain, and others cried out in agony until the act was completed. Usually, but not always, large stones caused more pain than did small ones. One man with a stone weighing 6¾ oz. said he had experienced no more than a little dull pain at the end of micturition. Multiple small stones were usually smooth, and, unless impacted, did not cause much pain. Of those suffering most severely a large proportion had phosphatic stones. *Incontinence* was very rare, except in children. *Hæmaturia* was a most important symptom in connexion with stone in the bladder. It had been said that all patients passed blood at some time, though it might be visible only under the microscope. Among Mr. Lett's own cases only 60 per cent. of the patients had detected blood in their urine. Movement would often bring on hæmaturia; in the days of the horse 'bus traversing cobble stones patients used to be sent, for diagnostic purposes, to take a ride in one of those vehicles, and this nearly always produced blood in the urine, with a desire for micturition. After exercise, pain might be felt

in the glans penis, in the urethra, or in the rectum and perineum. Oxalate stone was often associated with pain.

Methods of removal.—In young children the removal of a stone by suprapubic incision was a very simple and satisfactory procedure, and lithotrity might be left to those who had had considerable experience of that operation. Lithotrity was contra-indicated in cases with one or more diverticula, and in those with a growth in the bladder. Enlargement of the prostate called for special consideration. Nowadays if stone was complicated by the presence of an enlarged prostate, prostatectomy was usually performed, and the stone was extracted during the prostatectomy. If a suprapubic lithotomy was done without removal of the prostate, the wound would heal very slowly if there was much obstruction, and a permanent fistula might result. Lithotrity in cases of enlarged prostate was associated with certain special difficulties. Retention of urine might follow the operation, and though the patient might not have had a previous attack, the retention might persist indefinitely.

Discussion

The PRESIDENT said it was impossible to say whether the "stone age" had yet reached its zenith, but the curve of incidence of the large series of figures collected was still sharply rising. The decline might come with improved diets and general attention to vitamins. Conversely, the consumption of strawberries and of asparagus seemed to help the formation of urinary calculi. The difference in the incidence of stone in the poor as compared with the rich must be largely one of food. The fear of stone in the bladder brought to St. Peter's Hospital many patients who turned out to have prostatic trouble. At that hospital, too, quite a fair proportion of women with stone in the bladder were seen. Those with stone in the kidney, whose symptoms might be comparatively trivial, were more likely to go to a general than to a special hospital in the first instance.

Mr. H. P. WINSBURY-WHITE said in his experience renal calculus was more common than either bladder or urethral calculus. The disappearance of bladder stone in children constituted almost a romance, the change having synchronised with the improved standard of living among the working classes. The researches of McCarrison and others on rats had demonstrated the importance of various dietary changes, and especially of the part played by calcium. If a monotonous carbohydrate diet was taken and vitamin A was absent, the addition of calcium increased the risk of stone formation. He had tried to find a reason for the increased incidence of stone in adults. In 150 cases he found definite chronic inflammatory foci somewhere in the genital system or in the lower urinary tract: epididymis thickened, or seminal vesicles enlarged, or infection of the prostate. Perhaps 87 per cent. of his cases of stone were so affected. In two women, after Cæsarean section, he found in the stone unabsorbable ligature, and in one case the whole body of the uterus was adherent to the bladder. One male patient had three large stones in his bladder, and the pain was so great that he was having 10 grains of morphia daily, and even so he screamed each time he voided his urine. Mr. Winsbury-White had had two or three cases of post-prostatectomy stone, but each of them had had stone before the prostatectomy.

Mr. RALPH THOMPSON said it was unsafe to assume that foreign bodies were always introduced into the bladder per urethram; often they were introduced from the kidney into the ureter and thence into the bladder. He thought a useful classification of stones was into (*a*) travelling, and (*b*) resting stones.

Dr. CUTHBERT DUKES remarked that foreign bodies in cases of bladder stone were frequently overlooked, as the foreign body might be in the centre of the stone. The two foreign bodies he had most frequently found in women were slippery elm, introduced to bring about abortion, and in men candle grease used to seal the end of the penis as a contraceptive device. These substances were evidently not peculiar to Western countries for they had been found in a considerable proportion of 200 calculi brought from China and examined in Dr. Dukes's laboratory.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION

AT a meeting of this society held at the B.M.A. House on June 23rd, with Dr. E. PICKARD, the president, in the chair, a paper on the Influence of Investigation upon the Treatment of

Gastric and Duodenal Disorders

was read by Dr. SIBYL EASTWOOD, who showed X ray films of illustrative cases. Every case of severe pain or discomfort associated with meals, and also every case of definite ill-health associated with lesser degrees of pain and discomfort, should, she said, be investigated in the attempt to diagnose or exclude organic lesions. Apart from carcinoma of the stomach, the most important of these were chronic gastric and duodenal ulcers, which caused so much disability, carried such risk of grave complications—perforation and hæmorrhage—and were so liable to recur, that a positive diagnosis should imply a very complete investigation in all cases. This was of immediate value in deciding between medical and surgical treatment, in estimating the length of time to be allowed to the former, and in planning details of either, besides providing information for the régime at a later stage. It should include at least a radiological examination of the whole gastro-intestinal tract after a barium meal, a blood count, Wassermann reaction, a fractional test-meal, tests for occult blood in the stools, and search for infection in the mouth. Where the gall-bladder was clinically suspect, this should be X rayed after ingestion of Opacol. Nothing short of a firmly healed ulcer and the removal of factors contributory to recurrence, such as infected teeth, appendix, gall-bladder, or piles should be aimed at. This was a big programme. It was expensive either in money to the patient, or in time and material to hospitals and their medical staffs. Every effort should be made by the clinician to arrange investigations in such a way that on the one hand the minimum was expended on the patient without organic disease, and on the other that the maximum use made of all the data obtained whether an organic lesion had or had not been found. So-called "negative" investigations were of value in contributing to an understanding of the patient as a whole.

Dr. Eastwood regarded the fractional test-meal as of great use in assessing the individual type of gastric function, but valueless for diagnosis apart from the finding of (1) food residue in the resting juice after a twelve hours' fast, which supplied evidence of pyloric stenosis, (2) achlorhydria during three hours, even after histamine stimulation, which showed a constitutional or temporary defect of the gastric mucosa. Such an absolute achlorhydria

should lead to examination of the blood for pernicious anæmia. Absence of pernicious anæmia would still suggest the need for taking hydrochloric acid with meals throughout life, and a diet containing much meat, green vegetables, and fruit. When a duodenal ulcer had been diagnosed the fractional test-meal was of great interest. If the initial rise in hydrochloric acid secretion was high and the stomach emptied rapidly the condition was physiologically unsuitable for surgical treatment by posterior gastro-enterostomy, as the same type of curve persisted after this operation. Such cases should be subjected to partial gastrectomy if medical treatment failed. With a long-standing duodenal ulcer and some scarring, there was often partial atrophy of the acid-secreting cells of the gastric mucosa and a slow mounting, moderately high curve would be found. This was the type of case for posterior gastro-enterostomy. In the absence of an organic lesion, a high mounting curve with slow neutralisation, or with a secondary rise after an initial drop at about two hours, indicated a common type of functional failure. Patients with either curve could be relieved at once by a bland diet, and alkalis timed with the help of the curve. If the physiological disturbance were explained to them, they could treat recurrences caused by overwork or overeating, or emotional disturbances, without medical assistance. Patients with a tendency to a secondary acid secretion on an empty stomach often complained of waking at about 2 A.M. with nightmares or vague feelings of uneasiness, mental or physical, and were relieved by taking a teaspoonful of alkaline powder at bedtime. Hypochlorhydria was believed to predispose to upper intestinal infection and was often found associated with rheumatoid arthritis, ulcerative colitis, rosacea, and cholecystitis. According to the deficiency demonstrated, doses of from half to two teaspoonfuls of HCl, diluted in a tumbler of water flavoured as desired, drunk with every meal, should be advised. Dr. Eastwood showed charts from actual cases illustrating various types of curves found.

Radiology provided by far the most important method of diagnosis in the stomach and duodenum, but its uses did not end there. It should be used to check the results of treatment. Dr. Eastwood believed that 90–95 per cent. of simple gastric ulcers could be healed by medical means if the treatment was sound and that the only difference between the little one and the huge indurated long-standing one was the time involved to achieve healing. If the stomach was X rayed at monthly intervals no evidence of an ulcer niche would be found in many cases after the first month. If some evidence of healing—i.e., the niche being found smaller and shallower, had not occurred, malignancy should always be suspected and the data of the original diagnosis criticised. If the ulcer was in the prepyloric portion of the stomach, Dr. Eastwood strongly advised a surgical exploration in the absence of healing at the end of four weeks, as ulcers in this site were more often malignant than elsewhere. Further away from the pylorus there was less urgency. As the years passed she became more optimistic about gastric ulcers and more pessimistic about duodenal ones. The duodenum was awkward from the start. Pyloric spasm or achalasia was common without an adjacent ulcer. It was especially common in patients who had, or had had, duodenal ulcers. The radiological distinction between an irritable duodenum with some duodenitis, a duodenum containing an active ulcer, a scarred duodenum with an ulcer which might or might not be healing, or have healed, was always an exceedingly difficult one. Tenderness of a suspicious-looking duodenum found during palpation under an X ray screen was strongly suggestive of activity in an ulcer. The final diagnosis must be made on clinical grounds, and was helped by repeated search for occult blood in the stools. Using rigorous methods of estimating healing, she had reached the definite conclusion that histidine treatment had no appreciable curative effect on peptic ulceration.

Dr. Eastwood ended by emphasising the value of knowing the patient's past history when serious hæmorrhage was endangering life and the distinction between an acute and a chronic ulcer was difficult to make. She gave details of an unusually interesting case in which a negative X ray report had been due to the situation of the ulcer in the pyloric canal, and no further investigation had been made. After blood hæmoglobin had been raised from 30 to 110 per cent. by continuous drip transfusion, five donors being used, a partial gastrectomy was successfully performed by Miss E. C. Lewis.

THE MACALISTER LECTURE

THE eleventh Macalister lecture was delivered by Sir Francis Fremantle, M.P., on June 25th at the National Temperance Hospital. The chairman, Major RICHARD RIGG, in introducing Sir Francis, spoke of Sir John Macalister's progressive mind and his genius for friendship, and referred to the great part he had taken in the establishment of public libraries in this country and in the amalgamation of medical societies which led to the formation of the Royal Society of Medicine.

Sir FRANCIS FREMANTLE took as his subject

A Doctor in Parliament

He said that it was in 1894 that, on the advice of his Oxford professors Burdon-Sanderson and Arthur Thomson, he had decided to shape his course for Parliament as a medical man. With this object he had served in every department at Guy's Hospital, and had labelled himself by examination in medicine, surgery, and public health. He had obtained military and journalistic work in the South African, Russo-Japanese, and great wars, had taken courses in tropical medicine and hygiene, had served as plague medical officer in India, and had been for 15 years a county medical officer of health and school medical officer. He became a candidate for Parliament in 1906, and had been returned by St. Albans since 1919.

Medical M.P.'s had numbered more than 10 since 1886, reaching a record of 17 during the Lloyd George administration of 1919 and 18 under Mr. Ramsay Macdonald in 1929. At present there were 12. Until 1919 the Liberals and Irish Nationalists provided the greatest numbers of medical men. Latterly they had been preponderatingly Conservatives. Labour medical M.P.'s were first returned in 1922. Sir Francis mentioned the outstanding medical events in Parliamentary history of the decade before the war: the Midwives Act, Notification of Births Act, the Educational Administrative Provisions Bill (which gave local authorities charge over school hygiene), and the Health Insurance Act of 1911. As a medical officer of health he had not been keen on this last Act, for it duplicated much of the machinery already existing. Often in British history some individual, regardless of what existed already, had introduced a brand new scheme and by so doing

had made for progress. The war had underlined the necessity of paying due regard to nutrition and physique, and so led to the reorganisation of the Local Government Board. This was the foundation of the establishment of the Ministry of Health, the existence of which was largely brought about by Dr. Christopher Addison, Minister of Health in 1919. Through him also attention was given to the need for "homes fit for heroes to live in." By means of an almost inconceivably great subsidy he had revived the building industry. Before the war the entire population in this country was housed in 8¼ million houses; since then 3 million had been built in addition; of these 90 per cent. had a rateable value of less than £26. Although much criticism was levelled at the new houses they had without doubt profoundly benefited our national health. The survey, just completed, of present housing conditions showed overcrowding in only 4 per cent. of the houses. This problem was therefore not insoluble. Sir Francis considered that the Local Government Act (1929) was the greatest contribution to the efficiency of the health services of the post-war period. The Ministry of Health, he said, had worked steadily since its inception through an orderly programme of public health; it had also set up Royal Commissions, the first of which very properly led to the Rating and Assessment Act (1928). Incidentally this had probably cost the Conservatives several seats in the 1928 election.

THE WORK OF A MEDICAL MEMBER

Sir Francis then described the work of a medical member of Parliament. The medical aspect of the work was inevitably subsidiary to other aspects. First, the member had to represent his constituency in Parliament, and Parliament in his constituency; he had to contribute to legislation when he could, and he had also to keep in touch with details of local government; he had to make contact with other members of the House. Much of his time might be required for service on committees quite unconnected with medical problems. He himself now sat on seven committees, one of which was concerned with procedure, another with local government; the results of these deliberations would probably not be made public. A member of Parliament made his contribution in that way, and only to very few was it given to introduce a big Bill. He claimed that a doctor's training and experience was ideal for a member of the House. If only the traditional sequence of observation, diagnosis, prescription, treatment, after-care—and possibly post-mortem examination—were applied to politics many difficulties would disappear. Members of Parliament labelled as doctors were often damned as experts and were not expected to turn their attention to other subjects. From this Mr. Walter Elliot had wisely escaped. The speaker considered the party system to be good if well balanced, and he believed it would return. The parties were usually divided on some issue such as war or into the "have's" and "have-nots," or into those with considerable administrative experience and those with little The Medical Committee (of which Sir Francis is now chairman) was developed and reconstituted after the war. When he had joined it in 1920 Sir Watson Cheyne was the chairman and Dr. Walter Elliot secretary. In that year they had discussed the regulation of patent medicines, the medical organisation of the Territorial Force, medical privilege in the divorce courts, the prevention of venereal disease, the report of Lord Dawson's consultative council on reform of the medical services. But their chief joy lay in fighting Sir Frederick (now Lord) Banbury over his Antivivisectionist Dogs' Bill. On one occasion Sir Watson Cheyne had held the fort for an hour in moving the rejection of the Bill, and Mr. Elliot had talked it out bravely till closing time. Three months later it was recorded that "Elliot organised excellent verbosity" on the minor measures preceding the Dogs' Bill, and the House again rose before it could be reached.

The committee had been by no means unanimous in adopting this method of defence; many would have welcomed an open debate on the subject. But the House was not a logical, still less a scientific, assembly. Where material interests were concerned it was usually guided by experience. But when sentiment was aroused logic, experience, and sense of proportion went to the winds. It was wiser to avoid the strong seas of open debate and to take the quieter route of the canals, out of reach of the enemy, going on with the work with the help and under the reasonable control of the Government Departments. Although a Dogs' Protection Bill appeared from that time on the Order Paper steps were taken by the Medical Committee to prevent its being debated.

Sir Francis referred briefly to the outstanding medical M.P.'s of the post-war period. In the Upper House the profession had been represented before the war by Lord Ilkeston, who, as Sir Benjamin Foster, had been Parliamentary Secretary to the Local Government Board in 1892–93, and by Lord Lister, then over 80 and past taking an active part in administration. Since the war medicine had had three representatives in Lord Dawson, Lord Moynihan, and Lord Horder; recently it had had further reason for satisfaction in the elevation of Lord Dawson to the rank of Viscount—a unique recognition of unique services by the head of the profession and through him of the importance of medical work and objects in national life.

Mr. HERBERT PATERSON, in moving the vote of thanks to the speaker, said that the list of Macalister lecturers had not previously included an M.P., let alone a medical M.P. It was a great pity that there were not more medical members of Parliament.

Dr. G. BELLMAN, in seconding, mentioned that one only of the Ministers of Health had been a doctor. He also thought there should be more doctors in Parliament.

Captain G. S. ELLISTON, M.P., said that Sir Francis had conveyed no idea of his position in the House. While the Royal Colleges and the British Medical Association watched the big Bills, Sir Francis followed the course of every Bill with a medical bearing, and noticed also the lesser points directly involving medical interests which cropped up from day to day. The House of Commons was often prevented from doing ridiculous things by the doctor in Parliament.

L'UNION THERAPEUTIQUE: ANNUAL MEETING.—The annual general meeting of this international association, which was founded in 1934, will be held on Oct. 14th under the presidency of Prof. Loeper in Paris. Among the subjects to be discussed are the organisation of the control of drugs (Prof. Dautrebande, Liége), the treatment of diabetes mellitus by dieting and insulin (Prof. Luigi Zoja, Milan), ascorbic acid (Prof. Mouriquand, Lyons, and Dr. Coeur), pyrotherapy in the medical complications of gonorrhœa (Prof. Charles Richet and Dr. Facquet), and methods of artificial respiration (Prof. A. Cordier). The secretary, Dr. G. Leven, may be addressed at 24, rue de Téhéran, Paris VIII.

REVIEWS AND NOTICES OF BOOKS

Evans' Recent Advances in Physiology

Fifth edition. Revised by W. H. NEWTON, M.D., M.Sc. Manch., Senior Lecturer in Physiology, University College, London. London: J. and A. Churchill Ltd. 1936. Pp. 500. 15*s*.

"TIME may add charm to a work of art, and dignity even to a scientific text-book, but it deals harshly, almost vindictively, with a work pretending to the title of Recent Advances." Thus aptly does Dr. Newton prepare his readers for the radical alterations which six years of rapid progress have made necessary in the latest edition of this book—how radical may be judged from the fact that eight chapters are entirely new, and even the remaining four have needed extensive revision. The subjects treated are the coronary circulation, the metabolism of heart muscle (by Prof. Lovatt Evans, F.R.S.), the carotid sinus, carbonic anhydrase, the carriage of CO_2 in the blood, the oxygen-supply of the fœtus, the sex hormones, conduction and excitation in nerve (by Dr. Y. Solandt), chemical transmission at nerve-endings, the spinal reflex, the secretion of urine, and the nervous control of micturition and defæcation. The fact that the authors are writing for the physiologist need not deter the clinician from studying such of these chapters as happen to bear on his own problems. Physiology is becoming ever more specialised, experiments and methods more complex, and the expert in one branch is often the novice in another. In order to attract general attention the writers of a book of this kind must therefore be as careful in the presentation as in the selection of their material. Dr. Newton and his associates have not forgotten that things like heart-lung preparations, which are commonplace to them, may still be mysteries to the uninitiated. They have been at pains to illustrate their descriptions with many diagrams, to avoid technical phrases, and to write to such a high literary standard that the reader rarely needs to retrace his steps.

The physiologist is often accused of pre-occupation with the amphibian to the neglect of the primate, but although most of the information described in this book is necessarily derived from animals, its bearing on human clinical problems is so direct that the progressive clinician cannot afford to neglect it. This is not to imply that the reader may expect to gain a clear understanding of, say, the physiology of the sex hormones. The closer such problems are approached the more do they seem to bristle with complexities, just as the hedgehog bristles on the approach of the inquisitive dog. The undergraduate, who must be sadly perplexed by modern physiology, will find none of those neatly tabulated conclusions which, though easily memorised for retailing to examiners, in fact tend to hamper progress. But he who has outgrown his native awe of the finality of the printed word, and has realised that in physiology at least a frank admission of inability to define is the beginning of wisdom, will find the new edition of this book as useful and stimulating as its precursors.

The Common Cold and Influenza

By J. E. R. MCDONAGH, F.R.C.S. London: William Heinemann Ltd. 1936. Pp. 152. 12*s*. 6*d*.

Mr. McDonagh defines the term influenza as "applicable to all the seasonal acute manifestations of disease which are caused by the activity of the mutation forms of *Bacillus coli communis* in the large intestine." And this is merely an example of the unorthodox point of view from which this book is written. According to the author bacterial species change into one another, into filtrable viruses, or even into something simpler, with a bewildering facility. No valid evidence is advanced that these changes take place and indeed the theory that they do is at variance with ascertained facts.

A Text-book of Psychiatry

Fourth edition. By D. K. HENDERSON, M.D. Edin., F.R.F.P.S. Glasg., Professor of Psychiatry, University of Edinburgh; and R. D. GILLESPIE, M.D. Glasg., F.R.C.P. Lond., D.P.M. Lond., Physician for Psychological Medicine, Guy's Hospital. London: Humphrey Milford, Oxford University Press. 1936. Pp. 606. 18*s*.

THE characteristic feature of this book, its generous allowance of case-histories, is retained in this edition, which indeed shows little change from its predecessor. As much as three-fifths of the special chapters dealing with the non-organic psychoses are devoted to clinical records. Perhaps it is for this reason that the book has had a popularity among practitioners not often achieved by text-books. It is no less widely read among students, for the matter is well presented and the mean between argument and dogmatism properly maintained. Now that this standard British treatise has such excellent American rivals it is more than ever desirable that it should keep abreast of recent work. There is in this edition insufficient reference to the work in psychiatry published at home and abroad in the last few years. The section on war-psychoses and psychoneuroses remains unaltered, a relic or a piece of pessimism. The short bibliography with which the book closes also requires attention in the next edition. The book will continue to attract readers and will provide them with a sound basis for subsequent study.

Minor Surgery and the Treatment of Fractures

Twenty-first edition. By GWYNNE WILLIAMS, M.S., F.R.C.S., Surgeon, University College Hospital. London: J. and A. Churchill Ltd. 1936. Pp. 485. 10*s*. 6*d*.

IN the 75 years since the first edition of this work appeared under the title "Minor Surgery and Bandaging" it has come to be regarded not as a mere book but as an institution. The present editor is to be commended for his efforts to keep the work up to date, for when its position among the standard text-books of surgery has become so firmly established as to make it almost immune from competition, the temptation to let it rest on its laurels must have been strong. Mr. Gwynne Williams has not only resisted this temptation but has gone so far as to alter the very title of the book to meet the demands of surgical progress. Good bandaging, important though it be for the patient's comfort, is in danger of becoming a lost art; yet none will deny that the treatment of fractures is infinitely more important, and it is essential that the house surgeons and junior practitioners for whom this book is specially intended should be familiar with the management of these common and serious injuries. Descriptions of the striking advances in fracture treatment during recent years have therefore been added in the clear dogmatic

style characteristic of the book, while an adequate account of bandaging has been retained.

The technical details of the minor operations described in this classic have stood the test of time and scarcely call for comment, but there is one well-established practice which ought to be dropped—the use of gauze to drain infected wounds. Gauze may act as a wick to absorb water or spirit, but when its meshes are clogged with fibrin it forms a most efficient bung, and a most irritating one. Let us hope that in the next edition some non-absorbent and non-irritating substitute may be suggested. The chapter on anæsthetics has been rewritten by Dr. H. N. Webber and now includes brief but very helpful notes on present-day methods and apparatus, and also deals in a practical manner with the problem of choosing the most suitable anæsthetic for special operations and in special circumstances. There are a few small points which call for criticism, for instance the recommendation that half an hour should elapse between infiltration with novocain and the commencement of an operation under local anæsthesia, but it is astonishing that in a book concerned with practical problems there should be so little controversial matter.

A Handbook of Urology

For Students and Practitioners. By VERNON PENNELL, M.A., F.R.C.S., Hon. Surgeon and Surgeon with Charge of Urological Department, Addenbrooke's Hospital, Cambridge; Consulting Surgeon, Royston and District Hospital. London: Cambridge University Press. 1936. Pp. 224. 7*s.* 6*d.*

THE trend towards specialisation in the diagnosis and treatment of disease has given an impetus to the issue of small handbooks. Mr. Vernon Pennell has thrown the most recent of these lifebelts to practitioners and students striving to keep abreast of the advancement of knowledge, but in danger of drowning in a superabundance of facts. The handbook is clearly written, well arranged, and successfully compressed into not much more than 200 pages. Its defects are omissions which are inevitable in such a work. Perhaps the most serious of these will be found in the section dealing with the treatment of uræmia, which has been reduced to a paragraph of ten lines. Intravenous saline is not even mentioned, let alone that useful variant, continuous intravenous saline. Another omission is the treatment of infections of the urinary tract by means of sodium mandelate. Nothing would be easier or more futile, however, than to point out omissions in any compressed handbook, and the fact that certain recognised methods of treatment are not mentioned does not detract seriously from the value of this one. It should prove useful to those wanting a bird's-eye view of urology.

Vitality and Energy in Relation to the Constitution

By T. E. HAMMOND, F.R.C.S., Surgeon, Royal Infirmary, Cardiff. London: H. K. Lewis and Co., Ltd. 1936. Pp. 314. 12*s.* 6*d.*

IN this book Mr. Hammond attempts "to throw light on vitality and energy." His view appears to be that there are special centres of life and vital energy in the basal ganglia. He admits that there is little material support for his theory and that for the time being it must be regarded as conjecture. In describing how he has arrived at his conclusions he draws not only upon his clinical experience, describing cases whose course he thinks may be explained by his hypotheses, but also upon his observations of boxers and his recollections of happenings in childhood and during the war. He has much to say about stamina and the influence of the constitution, which must not be confused with health. In so far as these speculations lead to conclusions on the value of rest, sleep, relaxation, exercise adjusted to the individual's capacity, and a well-regulated way of life, the result is not different from the orthodoxy of preventive medicine. Regarded as the reflections of a surgeon, Mr. Hammond's book makes interesting fireside reading, but it clears up no problems of health or disease or life or death.

Examination of the Patient and Symptomatic Diagnosis

Second edition. By JOHN WATTS MURRAY, M.D. London: Henry Kimpton. 1936. Pp. 1219. 42*s.*

THIS large volume is divided into two parts. Section I. deals with history-taking, the technique of which is over-elaborately described. Much of what it contains could be far better learnt at the bedside, but the fact that such minute description should be considered necessary suggests that clinical teaching is not always so thorough or so readily available in the United States as in this country. Section II. deals with diseases of single organs or of the various body-systems, and includes chapters on the eye, the skin, and the diseases peculiar to women. The method substantially followed is to take a symptom and append a list of the diseases in which that symptom occurs. Theoretically this should present the reader with all the possibilities even though it does not help him much with differential diagnosis. Unfortunately it is, in practice, almost impossible to make the list of diseases complete. Thus, for example, on p. 171 under the symptom-heading "Itching, or a sensation of ants crawling over the skin," no mention is made of cocaine-addiction which is surely one of the classical causes of formication. Some of the answers are unnecessarily dogmatic. A headache which shows a strong tendency to come on towards night need not immediately suggest cerebral syphilis. It may merely, and more probably, point to an error of refraction. Similarly, neurasthenia is not the only, nor indeed the first thing to be suspected in a patient conscious of alterations in the heart-beat. A patient with auricular fibrillation may be equally conscious of such irregularity and is usually, and quite justifiably, nervous about it; and to say that heartburn occurs in indigestion is merely to substitute one symptom for another which gets us no forrader. We doubt whether the art of diagnosis can be taught by these cut-and-dried methods. The making of a diagnosis is essentially an intellectual process, a sifting of evidence rather than a rule of thumb. The book is profusely illustrated with good photographs and diagrams, and there is an adequate index.

ON May 30th (p. 1254) we published excerpts from Lord Moynihan's Linacre lecture delivered at Cambridge on May 6th. The lecture has now been expanded and published in book form by the Cambridge University Press under the title, "Truants, the Story of Some who deserted Medicine yet Triumphed." The volume contains 109 pages and the price is 3*s.* 6*d.*

THE LANCET

LONDON: SATURDAY, JULY 4, 1936

THE HEALTH OF A NATION

DURING the present century, and especially since the war, there has been a great increase in the amount of energy and public money expended in this country on measures designed to protect the health of the community and from time to time various inquiries have been made to ascertain whether the expenditure has secured the best possible results. One important inquiry was made ten years ago by the Royal Commission on National Health Insurance. More comprehensive, however, is that recently completed by the Committee on Scottish Health Services, which was appointed by the Secretary of State for Scotland in June, 1933; and the Committee's report, which has just been published by the Department of Health for Scotland, is a remarkable document of special interest to medical practitioners. The Committee was appointed to review the existing Scottish health services in the light of modern conditions and to recommend such changes in policy and organisation as might be considered necessary. The task was begun with a study of the various agencies now at work, the circumstances in which they originated, their development, successes, and shortcomings. It was found that in Scotland, as elsewhere, health services sprang from the fear of pestilence, and that this fear was long the main motive for nearly all organised health effort in Scotland. With the beginning of the century, however, there came a wider outlook. It was due to several causes, chief among which were the growing public concern for the continuance of a high infant mortality with all its implications, the declining birth-rate, and the unsatisfactory physical conditions revealed by the examination of army recruits during the South African war. Evidently it was not enough to remove specific conditions inimical to health; a more positive policy was needed—a policy that should not only impose safeguards against disease, but should actively promote the health of the people and seek to realise for all the full possibilities of healthy living. The pathological conception of disease as a basis for health measures gradually gave place to the wider concept in which medicine, both in its preventive and curative aspects, is regarded as applied biology. This view has inspired much of the progress made in recent developments of health services—in maternity and child welfare, for example, and in school hygiene and industrial hygiene—and the Committee adopt it in their study of what has already been achieved and in their recommendations for future action. The record of achievement is impressive; the Scottish health services have certainly justified their existence by remarkable results. But there is still much to be done. The services in many points are ill-adapted to modern conditions; there are gaps in the health front, and effort and money are being spent in attempts to ameliorate defects that might have been prevented. Further developments are necessary to enable the services to yield a full return for the expenditure upon them.

The recommendations (some of which are transcribed on p. 36 of this issue) cover a wide field, and perhaps the most important are those relating to the extended provision of general medical services. The Committee find that large numbers of people are unable to secure the aid of a general medical practitioner, and that this, especially where women and children are concerned, seriously impairs the efficiency and development of some of the services provided by the local authorities. They contemplate a complete and coördinated medical service in which the general practitioner, in his capacity as family doctor, will work in liaison between the homes of the people and the different statutory and other agencies. As a step in this direction they recommend that the provision made for the medical attendance of persons insured under the health insurance system should be extended to their dependants and other persons in similar economic circumstances. The Committee attach great importance to the function of a family doctor in a modern community and think that the State must depend increasingly on the general practitioner for the medical contribution to further progress in public health, rather than on an extended employment of whole-time medical officers for clinical work. Nevertheless they are inclined to the view that at the present time the "pathological conception" plays a less prominent part in the statutory health services than in private medical practice, and that if the general practitioner is adequately to fulfil his function as a family adviser, through whom the people may most effectively be instructed in the essentials of healthy living, he should be more imbued with the preventive idea of health and disease. It is recognised that this may involve some modification of the training of medical students.

Dealing with the cost of extending insurance medical practice to the dependants of the insured, the Committee estimate the number of dependants at 1,600,000; these, together with the 1,900,000 insured persons, represent some 70 per cent. of the total population of Scotland. They think that for the dependants a capitation fee of 6*s*. would afford reasonable medical remuneration, being probably considerably more than doctors are now receiving for such attendance, and this together with allowances for drugs, mileage, and administration would bring the total annual cost to 9*s*. per person, or about £720,000 in all. It is proposed that this sum should be raised by increasing the weekly insurance contribution by 3*d*. for men and 1*d*. for women, to which would be added the usual Exchequer grant. It is proposed also that the general practitioner service so extended should undertake the domiciliary treatment of the necessitous class, the local authority paying into the insurance fund the contributions required to

discharge its obligations in respect of this class, and of persons in economic circumstances similar to those of the insured. All persons coming within the scope of the scheme would have free choice of doctor, and medical remuneration would be on the capitation method. It will be seen that the Committee seek to retain the contributory principle for medical benefit and its proposed extensions, but in this they are not unanimous. Of the eighteen members, seven have submitted a memorandum giving reasons why they regard such an arrangement, under the new conditions contemplated, as neither logical nor capable of being maintained for any length of time.

The extension of general practitioner services is the basis of the Committee's scheme of reform, but many other important recommendations are made. Some are highly controversial, but all merit careful study by those in any country who have public health progress at heart; for health problems transcend national frontiers and have in them much that is common to all countries.

THE INTERACTIONS OF ADRENALS AND THYMUS

THE evolution of thymic tissue in Addison's disease is perhaps the only well-known pathological manifestation of the interaction between the adrenals and the thymus glands. A fundamental relation between the two glands has been recently demonstrated by Dr. HANS SELYE,[1] working in COLLIP'S laboratory. Using some 1500 female rats from one colony, he has conducted a series of experiments designed to clarify the reaction of the thymus and adrenals to trauma, various intoxications, and fasting. In particular he has devoted attention to the so-called "accidental" involution of the thymus that is known to follow injury. By drawing his conclusions from the averages of large experimental series he has been able to overcome the difficulty arising from the considerable variations found in the weights of organs even in animals of the same age-group. A striking decrease in the weight of the thymus follows fasting for periods of four days or longer in one group of experiments. It is of course familiar to pathologists that at autopsy the amount of lymphadenoid tissue in the body reflects the state of general nutrition, but the diminution in thymic weight in SELYE'S rats appears to be disproportionately greater than the loss in body-weight, which indeed is hardly appreciable, according to his figures, over the short periods of the experiments. Amongst the drugs used atropine, morphine, and formaldehyde, given by subcutaneous injection, are particularly active in producing thymic involution. Atropine and morphine in doses of 2 c.cm. of a 1 per cent. solution and formaldehyde in doses of 0·5 c.cm. of a 4 per cent. solution, injected twice daily, will produce severe degrees of involution in 48 hours from the first dose. The histological changes in the thymus, which are said to begin as early as six hours after the first dose, are first an œdema, accompanied by a little fluid exudate in the pleural cavity and occasionally in the retroperitoneal tissues, followed in 24 hours by degeneration of the thymic cells and in 48 hours by subsidence of the œdema and gradual removal of the cell debris resulting from the degeneration. At the same time the adrenals show an increase in size which is proportionate to the decrease in the thymus, accompanied by loss of lipoid from the cortex. This change is interpreted as evidence of increased activity. The increase in size is attributed to cortical hypertrophy, an important statement which we should like to see confirmed by careful histological studies.

This combined thymic and adrenal change was also produced by extensive skin lesions, bone fractures, peritoneal injuries, or by exciting the animal and simultaneously preventing its free movement. In further series of experiments SELYE goes on to show that in adrenalectomised animals thymic involution is not obtained with these different damaging agents; and he concludes that an adrenal secretion is essential for such involution. This has an important bearing on the apparent evolution of the thymus both in Addison's disease and in experimental adrenalectomy. SELYE, after considering all the evidence, doubts whether the thymus really undergoes hyperplasia in these circumstances. The results of controlled animal experiments, at any rate, seem to suggest that the apparent enlargement of the thymus after adrenalectomy is due rather to a failure of the gland to undergo normal involution. If this view is correct it follows that the adrenal ordinarily secretes some hormone which induces involution of the thymus and in the absence of which the thymus will retain its juvenile character. In further experiments SELYE failed to demonstrate that this hormone is either adrenaline or cortin. Thus adrenaline failed to induce thymic involution in the adrenalectomised animal. It is of interest to note that sodium chloride, while greatly improving the general condition of such animals and almost completely restoring their resistance to drugs, also failed to induce thymic involution. Although adrenaline is apparently not the hormone concerned, the conservation of the medulla appears to be essential. Again, in a series of hypophysectomised animals, in which, as is well known, the adrenal cortex undergoes atrophy, it was found that the thymus did not respond normally to the agents known to produce pronounced involution. It would thus appear, then, that the presence of the hypophysis also is necessary for the normal secretion of the adrenal hormone responsible for thymic involution. SELYE'S results in this respect are however susceptible to criticism on the grounds that the crucial experiments were carried out only eight days after hypophysectomy, a period which may be insufficient for the establishment of the remote effects of this procedure.

The meaning of this complex reaction on the part of the thymus and adrenals is still obscure. SELYE regards it as a defence reaction, pointing out that it is most noticeable when the damaging influence acts on the organism for the first time.

[1] Brit. Jour. Exper. Path., 1936, xvii., 234.

He says, "We saw repeatedly that, after an initial enlargement, the adrenal decreases in size and returns to normal even though injections of the drug which produced the initial enlargement are continued. In such cases the lipoid content of the cortex returns to normal and the thymus resumes its normal size." Although SELYE does not discuss the condition known as status lymphaticus his work seems to indicate an approach to this unsolved problem. In informed circles the theory that sudden death in young subjects after an apparently inadequate injury is due to excessive development of the thymus and lymphadenoid tissue generally has, on statistical grounds, been abandoned. But no acceptable alternative explanation has so far been brought forward to explain these tragic occurrences. Is it possible that they are attributable to an excessive reaction of the type described by SELYE—leading to death before perceptible changes take place in the organs? We do not know whether SELYE experienced unexpected fatalities in his experiments. If so interest in his work would develop from a new angle.

SEXUAL INTERGRADES

ALTHOUGH the different forms of intersexual abnormality are more or less connected in their origins, it is convenient to divide them into groups for consideration. *Hermaphroditism* is essentially a condition in which the distinct functioning male and female sexual glands are present in the same body; this is the standard of true hermaphroditism, irrespective of any external features, but it must not be forgotten that the production of mature and presumably functional sex-cells cannot lead to reproduction if the secondary sexual formations are at fault. *Intersexes* possess the gonads of one sex with some of the secondary attributes of the other; there are many possible grades, from those whose external characters of the other sex are hardly noticeable, to those which come very near to hermaphroditism, although not satisfying the definition given above. The secondary sexual characters of vertebrates result from the action of hormones from the gonads, and are to some extent reversible. In *gynandromorphs*, however, which are known among birds and insects and may occur unnoticed in other groups, the characters differ on the two sides of the body—which is difficult to explain, since hormones are not distributed to the body to one or other side.

It is common belief to-day that a specific sex or sex-tendency is given to the zygote at the moment of fertilisation, through the chromosomal constitution of the conjugating spermatozoon, but this belief does not take into account the hidden possibilities in the embryo. Nevertheless, bisexuality is probably a very old property of organisms, preceding parthenogenesis in its evolution, and it is now generally accepted among biologists that the body retains the potentialities of both sexes, although normally one is in control, the other latent. This seems to follow from the observed occurrence of sexual intergrades and of sex-reversal and is known to be genetic in character and derivation. Change from one sex to the other occurs normally in the development of certain amphibians and occasionally in higher vertebrates, especially in birds. There is no such thing, however, as a neutral state of the body, which is either male or female, or both intermingled in various grades, and the somatic tissues respond indifferently to either of the two sexual glands. Bearing in mind these facts, and the bisexual potentialities of the growing body, it is not difficult to see how the various kinds of sexual intergrades may arise: in normal pairing the genetic sex imposed on the embryo is always effective throughout development but, if there is some abnormality in one or both of the conjugating nuclei, then quantitative and qualitative differences of various kinds may hinder or even reverse the supremacy of the genetic sex. Hermaphrodites are cases in which there has been a change of sex of the sort mentioned above, but in which the chromosome-valency of one sex is so very near that of the other that there is no suppression of the other sex-gland or of its functions or effects. An intersex, at one end of the scale, may be an actual hermaphrodite in this sense, or may have lost in some degree one of the sex-glands which had already stamped some of its effects on the soma. Reversal of sex, in natural development, is usually a hermaphrodite stage passed through in the normal gaining of the male sex, effected so early and so completely that no secondary changes appear permanently. It occurs sometimes, however, in the adult, when there are accompanying somatic changes. But such reversal of sex is usually pathological, as in well-known cases in birds, or as in the parasitic infections in crabs, when the removal of one sex-gland allows the latent powers of the other sex to develop the corresponding gland, with its secondary effects. Gynandromorphs, so far as their internal constitution is concerned, are hermaphrodites, but, as already pointed out, their outer manifestations of double sex cannot be due to the hormones of these glands alone; something else must be postulated to determine the remarkable disposition of secondary attributes. The abnormality here is purely somatic, and must be explained somatically, and we are driven to look on the two halves of the body in these cases as being different in their sensitivity to male and female hormones, such difference perhaps having its origin in some early segmentation and thus approximating to the assumed condition in insects.

It is needful to remember the dependence in many ways of personality on hormonic influence as well as on genetic conditions. The normal woman, with her female cellular constitution, has also an array of primary and secondary formations which differ in part or whole from those in a man, so that her total make-up is on a plane distinct from his. When the distinct planes have been confused because the genohormonic complexes are mixed in the body, we may expect to find the psychical correlatives of the physical states. We have here a biological foundation for some of the criticisms of his fellow men (and women) which have been made by the man in the street for ages past.

ANNOTATIONS

TRAINING FOR RESEARCH IN TROPICAL MEDICINE

THE initial scheme outlined by the Medical Research Council on the advice of a committee appointed by them to consider the most effective means of promoting investigations in tropical medicine will be widely approved. It has been devised after consultation with the Colonial Office, and has the support not only of this office but of the schools of tropical medicine in this country. It is essentially a twofold plan for training and employment, the employment being open to any eligible candidate, not only to those who have taken what amounts to a course of post-graduate training in tropical medical research at the expense of the State. The junior Fellowships, of which the conditions are set out on p. 48, differ from those offered by other bodies—notably the Beit Fellowships—in that they are by definition "learning posts"; the first year will be devoted to the acquisition of a basic knowledge of tropical diseases, and even at the end of his three years the candidate will clearly be judged not by his performance but by his promise. The expressed intention to establish permanent and pensionable appointments for research work in tropical medicine, including senior posts, offering as it does some assurance of congenial employment, should prove an incentive to those who would like to devote their lives to active personal investigation rather than to the administrative work which is too often the ultimate fate of the research worker. It is clear that the range of employment in tropical medical research, at present somewhat limited, is likely to be considerably extended as soon as trained personnel is available.

RADIUM POISONING

THE reproduction in animals of the lesions found in human subjects accidentally poisoned by radium was the object of experiments recently performed by Maurice Rosenthal and Edwin Grace.[1] They used only four rabbits, two male and two female, but studied them thoroughly. The animals, which were kept on an adequate basal diet, were given by the mouth several drops of a suspension of radium sulphate in glycerin three times a day for 90 consecutive days, the total dose given to each amounting to about 100 microgrammes. The tissue changes observed were: gingivitis, alopecia, abrasion of teeth, necrosis of bone, spontaneous fractures, regenerative anæmia, hyperplasia, and fibrosis of bone-marrow. These are similar to the changes described [2] by H. S. Martland in radium dial painters except that no sarcomatous lesions developed in the rabbits. Martland regarded mesothorium as responsible for the jaw necrosis and also for the severe anæmia in the early acute cases, but the animal experiments suggest that changes of a similar nature can be produced by sufficient quantities of radium alone. In the lymph nodes an initial stimulation of the stem cells was followed by damage to these cells resulting in depletion and atrophy of the lymphoid tissue. In the circulating blood the total number of lymphocytes was reduced. The development of myeloid tissue in lymph nodes and spleen, associated with the extreme myelocytic hyperplasia in the marrow, suggested to the authors that the occurrence of leukæmia in X ray and radium workers may not be, as H. Rolleston [3] thought likely, a pure coincidence. The changes found by Martland, and now by Rosenthal and Grace, are at variance with those described by F. R. Sabin and her co-workers,[4] who found that the fundamental damage to rabbits after injections of radium and mesothorium was in the stem cells or lymphoid tissues, not in the granulocytic cells of the marrow. The fact that no actual malignant disease was produced in these four rabbits loses significance when it is remembered that the systemic changes were so great that the animals did not survive long. It would be of great interest to know whether similar quantities, not sufficient to produce these fatal changes, would be followed by sarcoma at a later stage. Fortunately the accepted methods of treatment by radium do not include either ingestion or inhalation. Preparations said to contain radioactive material to be taken or inhaled should clearly be avoided, for if they are not inert their ingestion would be risky. The need to safeguard those who work with radium from any possibility of ingestion or inhalation is well recognised.

[1] Amer. Jour. Med. Sci., May, 1936, p. 607.
[2] Jour. Amer. Med. Assoc., 1929, xcii., 1929, and Amer. Jour. Cancer, 1931, xv., 2435.

THE CAUSE OF DEATH IN INTESTINAL OBSTRUCTION

Bottin's experiments [5] on dogs lead him to conclude that bacterial infection plays little part in causing the serious sequelæ of intestinal obstruction. Such infection might act in three ways: by producing peritonitis, septicæmia, or metastatic foci. Of these he found that peritonitis occurred only through leakage along the intestinal surfaces, and he attributes it to insufficient peritoneal suture at the point of artificial obstruction. Even the finding of organisms (*Bacillus welchii*, *B. coli*, staphylococcus, and streptococcus) in the peritoneal fluid was not constant, and seemed to bear no relation to the gravity of the animals' condition at the time the fluid was examined. It is true that bacteria could sometimes be found in the blood stream, and more often in the blood taken by cannula from the portal vein than in that from the jugular vein or from the heart. But this bacteræmia was never very severe, and, provided that the operation wound remained clean, the organisms rapidly disappeared from the blood on the restoration of the bowel to normal—i.e., on removing the obstruction. As for metastatic foci, though broncho-pneumonia is fairly often found at autopsy on dogs dying of experimental intestinal obstruction, Bottin does not attach much significance to it. It is common in very young and very old dogs, apart altogether from obstruction, and the organisms recovered from the lungs in his experiments were not those of the intestinal flora. These objections to the view that obstruction kills through bacterial infection gain interest from the evidence published by G. C. Knight and D. Slome,[6] and more recently by H. Wahren,[7] that a non-bacterial toxin, produced in the wall of the bowel, may be the cause of collapse in cases of intestinal strangulation. Wahren produced ileal strangulation under standard conditions in two groups of rabbits. In one group he isolated the affected loop from the rest of the

[3] Quart. Jour. Med., 1930, xxiv., 101.
[4] Jour. Exper. Med., 1932, lvi., 267.
[5] Rev. belge des sci. méd., 1936, viii., 46.
[6] See THE LANCET, 1936, i., 1128.
[7] Acta Chir. Scand., 1936, lxxviii., 121.

peritoneal cavity with a thin rubber membrane. The animals died from peritonitis after periods ranging from 45 to 89 hours (average 58). In the control group there was no isolation and the rabbits died, generally without peritonitis, at an average 16 hours after operation. These experiments led to the belief that the intoxication took place chiefly through the peritoneum. It was also found that by applying animal charcoal to the loop, with a little in the peritoneal cavity, life after operation could be prolonged to an average of 27 hours. Pharmacological tests showed that it was not likely that the toxic substance could be histamine, acetylcholine, adanylic acid, or Euler-Gaddam's "fourth blood-pressure reducing substance," but Wahren reached no definite conclusion about its nature.

MATERNITY IN INDIA

A FULL report[1] of the First All-India Obstetric Congress held in January last reaches us at the same time as the welcome intimation that Indian medical qualifications are again being recognised for registration in this country. It will be remembered that since 1930 these degrees have not satisfied the General Medical Council because of cumulative evidence that the teaching of midwifery in India was not reaching a standard which would be recognised for medical graduates in this country. The position was by no means simple, for, as Sir Norman Walker stated in his presidential address a month ago, Bombay has the best maternity hospital he has seen anywhere, and in 1926, when he paid his second visit of inspection to Indian medical schools, he found evidence of general improvement almost everywhere. Madras, again, in its Government Hospital for Women and Children, founded in 1844, has the oldest maternity institution in British India, and for many years its training school was the only school of its kind in the country. Happily the reports of medical inspectors for the Medical Council of India, which is now the coördinating authority, have satisfied the G.M.C. that the degrees granted by the universities of Bombay, Lucknow, Madras, and Patna should be recognised for registration, this recognition in the case of the first three to date from February, 1930; and doubtless the other universities will soon come in. In welcoming delegates to the Madras congress, Dr. A. L. Mudaliar took the opportunity of appealing to the Provincial Governments to keep open the doors of large maternity institutions for the training of midwives and the post-graduate training of practitioners. Recalling the conditions peculiar to India, which make pregnancy there so much more hazardous than they are in this country, Lord Erskine, governor of Madras, while claiming that city as a pioneer in the care of maternity, had to admit that the mortality-rate among mothers is still four or five times as high as in Great Britain. What is wanted, he said, is wider propagation of knowledge already to hand. Miss Ida Scudder, president of the congress, insisted that rural standards must be raised, insurmountable as the task seems at present. She put it to the congress whether it would not be possible to get for rural practitioners, nurses, and midwives the recurrent opportunity of study at some large central hospital, perhaps for a month each year, and so provide the stimulus to raising the standard of midwifery in the vast village population of India.

The papers read at the scientific session covered a large part of obstetrics and gynæcology. Pelvic disproportion received the most attention. The views expressed by Dr. Purandare, who opened the discussion on this subject, and of subsequent speakers show that obstetricians in India have had to consider the problem as carefully, if not more carefully, than those in this country, by whom their findings will be read with keen interest. Other important discussions covered the causes and treatment of post-partum hæmorrhage, the results of radium treatment of cancer of the cervix, and a study of some five hundred cases of functional uterine hæmorrhage.

[1] Madras: Solden and Co.

EXHAUST GAS AND SMOKE

THE suggestion has been made that the greater incidence of primary lung tumours in man during recent years might be connected with the inhalation of exhaust gases or of cigarette smoke, both of which have increased. Dr. J. Argyle Campbell has attempted to investigate the possibility by organising experiments on mice,[1] since these rodents tend to suffer from pulmonary tumours, and moreover the fact that their duration of life does not exceed two to three years made it possible for any experimental exposure to cover the greater part of their normal life, thus providing conditions approximating to those which affect man. One group of mice was exposed for seven hours on five days a week for the greater part of their lives to concentrations of exhaust fumes resembling those obtaining in traffic blocks and garages. Another group was exposed to cigarette smoke in sufficient concentration to correspond to that inhaled by the more than moderate smoker. The results were largely negative; not only did the general health and duration of life of both groups compare favourably with the controls, but exhaust gases were shown to have little effect on the incidence of primary lung tumours. Lung tumours were above the average in frequency in the tobacco smoke group, but since these mice survived longer than the other groups more mice reached the age at which tumour formation is normally more frequent.

IMMUNE GLOBULIN IN THE PREVENTION OF MEASLES

IN assessing the value of a particular form of treatment the practitioner is faced with the difficulty that his own field of experience is generally too small to enable him to draw definite conclusions. Pooled data may overcome the difficulty but their collection requires organisation to ensure uniformity of methods and of record keeping. An example of such organisation is reported by Dr. E. G. McGavran, the secretary to the Hillsdale County Medical Society, Michigan.[2] In the face of a predicted epidemic of measles of unusual proportion, this society organised a test of the value of immune globulin, given intramuscularly or orally, in the prevention and modification of the disease. The immune globulin was distributed to the physicians free of charge, in return for a careful record of the cases to be submitted for statistical analysis. From 3 to 5 c.cm. of immune globulin were given intramuscularly or 12 c.cm. orally, when possible between the fourth and ninth day after exposure. Of 77 persons given an intramuscular injection it is reported that 40 per cent. did not contract measles, 55 per cent. had a modified attack, and 5 per cent. an unmodified attack (in 3 of these 4 cases of failure the injection was given nine or more days after exposure). Of 16 persons

[1] Brit. Jour. Exper. Path., April, 1936, p. 146.
[2] Jour. Amer. Med. Assoc., May 23rd, 1936, p. 1781.

treated orally 1 escaped attack, 12 were regarded as having a modified attack, and 3 an unmodified attack. For both methods of administration the results suggest a favourable issue, but the figures are somewhat difficult to interpret. No control group is available to assess the proportion of persons that would escape attack in the absence of treatment, though it is, perhaps, unlikely that it would reach as high a figure as 40 per cent. "Modification" is a rather vague term. It proved impossible to keep temperature charts, nor could frequent calls be made on the immunised patients in a rural practice. It is stated that in the 1934–35 epidemic most of the cases of measles were of an unusually severe nature, "all symptoms being present, so that the effect of the treated cases stood out in bold contrast to those not receiving treatment." On the other hand, it is reported that no deaths have taken place with the largest number of cases the county has ever seen, and the fatality-rate in the whole State was much lower in 1935 than in the epidemic of 1932. This observation rather suggests a general prevalence of milder attacks. It is concluded tentatively that the death-rate from measles in the county seems to have been lowered during the period of this county-wide project, but it is not stated what proportion of all cases were immunised, which would be of much interest in this connexion. After intramuscular administration slight local reaction occurred in 32 of the 77 patients, and slight febrile reaction was observed in less than one-sixth of the cases, but no severe or general reaction was reported.

THYROIDECTOMY FOR ANGINA PECTORIS

THE complete removal of an apparently normal thyroid gland in the hope of relieving intractable heart failure, including anginal failure, is a drastic method of treatment for which considerable success has been claimed. The observation has also been made that patients with toxic goitre and angina may derive relief from their pain after thyroidectomy, and the reverse effect, that is the development of angina in myxœdematous patients treated with thyroid extract, is also recognised. Weinstein, Davis, Berlin, and Blumgart have investigated the manner in which anginal pain is relieved after removal of the normal thyroid, and have noted that while some weeks elapsed before the basal metabolic rate dropped to any considerable extent the angina improved immediately after the operation. They attributed the benefit to interruption of nervous pathways in the course of the operation, the effect being similar to that of cervical sympathectomy, a surgical method of treating angina at one time in favour. The idea was supported by the observation that hemithyroidectomy gave immediate relief from pain only on the operated side of the body. A recent report on thyroidectomy for angina is made by J. D. Bisgard,[1] whose patient, aged 67, had an old-standing goitre and a metabolic rate of about −30 per cent.; there were no symptoms of hyper- or hypo-thyroidism, but he was incapacitated by angina of the effort type. After subtotal thyroidectomy, only a small portion of the right lobe being left, he was almost completely relieved of pain, and able to undertake light work, the period of post-operative observation extending to eleven months. The interesting feature of the case is the initial low metabolism, which showed a definite rise after treatment and at a time when the anginal pain was favourably affected; this appears to supply strong evidence against the view that such an effect, when permanent, is a result of an abnormally low metabolism. Cases of toxic goitre have been reported in which symptoms have been relieved by thyroidectomy, even though the metabolism did not fall. It is also recognised that cardiac disturbances, especially auricular fibrillation, may be associated with old-standing degenerated goitres, without any increase in metabolism, and that removal of the goitre may be followed by reappearance of normal rhythm. The possibility that the development of angina in a subject with some degree of coronary narrowing is due to some toxic action on the heart independent of interference with metabolism must also be considered.

[1] Jour. Amer. Med. Assoc., May 9th, 1936, p. 1639.

HEPARIN

HEPARIN, which was discovered accidentally by Jay McLean in 1916, is well known to be an efficient anticoagulant, but has hitherto been little used on account of its cost. Charles and Scott three years ago[1] obtained a greatly increased yield from the liver and showed that other organs, especially the lungs, are rich in it. Probably if the demand were greater the price could now be reduced. The growing interest in its properties is manifest in five communications to a recent number of the *Acta Medica Scandinavica*.

The chemical nature of heparin has been debated for twenty years and the only point upon which opinion has been unanimous is that it contains a group or groups of carbohydrate. E. Jorpes[2] brings forward evidence to show that it consists of a mixture of chondroitin di- and tri-sulphuric acids. He ascribes the anticoagulant effect to the sulphate groups, which perhaps brings it into line with the synthetic anticoagulants such as Congo-red, Germanin, and Liquoid, which are polysulphonic acids. The practical uses of heparin are discussed in the succeeding papers. Widström and Wilander have injected heparin into the pleural cavities of rabbits, pleurisy having previously been produced by intrapleural injection of iodine. They found that the precipitation of fibrin from pleural effusions was prevented by heparin, with the result that adhesions are not formed and the effusion is more readily absorbed. They suggest that heparin might be of value in the treatment of pleural effusion and are now trying it clinically. Hedenius and Wilander have investigated the effect of the intravenous injection of heparin in man. They have shown that one dose of 50–150 mg. prolongs coagulation time for 3–7 hours; repeated injections give an effect of longer duration. The patients suffered no untoward symptoms and the authors suggest its use as a prophylactic for post-operative thrombosis. E. Sköld records 24 blood transfusions where heparin was used as an anticoagulant; one or two of the patients suffered mild febrile reactions, but the great majority had no symptoms referable to the transfusion. It is not clear, however, that heparin is superior to citrate for this purpose. Perhaps the most interesting communication is that describing a study of erythrocyte sedimentation-rate (E.S.R.) by Enocksson, Gjertz, Schnell, and Torgersruud, who used heparin instead of sodium citrate. They found that 1/15–1/20 c.cm. of a 1 per cent. solution of heparin efficiently prevents the coagulation of 2 c.cm. of blood. An exhaustive comparison of results using citrate and heparin on the same material shows that the former tends to stabilise the E.S.R.; correlation between

[1] Jour. Biol. Chem., 1933, cii., 425.
[2] Acta Med. Scand., 1936, lxxxviii., 427.

the two is good in normal cases, but in pathological states the heparin reading is usually the higher and, moreover, the stabilising effect of citrate is not the same in all conditions. This stabilising effect is well shown in a hæmophilic where the coagulation time was so long that an E.S.R. could be performed without anticoagulant. The readings after one hour were: no anticoagulant, 17 mm.; citrate, 8 mm.; heparin, 16 mm. It seems likely from this work that when heparin becomes cheaper it will replace citrate in the estimation of the E.S.R.

THE BILE IN PREGNANCY

THE frequency of symptoms of biliary disturbance in pregnancy, and the fact that gall-stones are far more common in women than in men, suggest that there must be something peculiar about the gall-bladder in pregnancy. Theories and dogmatic statements have not been wanting, and much work has been done on the blood in the living and on post-mortem bile in order to try to substantiate one or other of them. Little attempt seems to have been made of the investigation of the problem by the only direct method: the study of the bile of pregnant women. Dr. Milton G. Potter[1] has made it a practice to aspirate the bile from all his cases of Cæsarean section which number 390. He has noticed that the gall-bladder was distended with tarry bile in 75 per cent. of the cases, though this may have been due only to pre-operative starvation. Bacterial invasion of the gall-bladder was apparently rare. The changes in the bile-salt and cholesterol content of the bile seemed to him remarkable, but unfortunately no control series of normal cases or even of non-pregnant surgical cases was available, and the methods of bile-salt estimation vary so greatly that it is difficult to compare Dr. Potter's results with those of previous workers. The importance of this communication rests on its demonstration that this controversial question can be attacked directly. It should be noted that the patients did not suffer as a result of the aspiration of their gall-bladders; indeed, post-operative nausea and vomiting were thought to have been reduced by the procedure, and the patients said they felt more comfortable after it.

THE ANÆMIA OF SEPSIS

IN clinical practice it is well known that hæmopoietic remedies like iron or liver extract are ineffective as long as sepsis is present The cause of this anæmia is not known, though it is assumed that the activity of the bone-marrow is inhibited; in malaria, for example, removal of the parasite alone will often result in an immediate reticulocyte response and improvement, both in the red cell count and in hæmoglobin, which suggests that an inhibitory factor has been removed. F. S. Robsheit-Robbins and G. H. Whipple have recently described[2] experimental results from which it appears possible that infection exerts this inhibitory action by causing a disturbance of internal metabolism related to hæmoglobin building. Two dogs in their colony of anæmic dogs developed by chance a localised infection of the uterus. The animals, which had been under observation over a period of several years, retained their health and normal food consumption but lost their capacity to form red cells and hæmoglobin even on a liver diet. Following hysterectomy there was a rapid improvement in the blood picture. In one of the animals, in fact, an excess of hæmoglobin over that expected from the basal diet and that given in transfusions was produced. The authors suggest this was obtained from the high kidney diet given before operation. They conclude, therefore, that infection does not interfere with the absorption and storage of products going to form hæmoglobin, but does interfere with the orderly production of new hæmoglobin within the body, since hæmoglobin appeared to have been formed from material absorbed but not utilised during the infection.

A sterile abscess, formed by turpentine injection, was also found to diminish hæmoglobin production, both when liver was being fed and in fasting periods, but not when the basal standard bread ration was given. It is suggested in explanation of these somewhat discrepant results that the dog on a liver diet is producing hæmoglobin in greater amounts than on a bread diet and that therefore the physiological machine is working under greater stress and is more liable to toxic agents; in the fasting dog the machine is also working under difficulties. Since the anæmic bile-fistula dog when given a sterile abscess produced no excess of bile-pigment it is probable that red cell destruction is not a factor in causing the anæmia of sepsis.

[1] Jour. Amer. Med. Assoc., March 28th, 1936, p. 1070.
[2] Jour. Exper. Med., 1936, lxiii., 767.

FOURTH-SCHEDULE POISONS

ACCORDING to Montaigne, as put into English by John Florio: "Plato did once chide a child for playing with nuts, who answered him 'thou chidest me for a small matter.' 'Custom,' replied Plato, 'is no small matter.'" When a received law is changed and what has hitherto been customary becomes an offence within the meaning of some new Act of Parliament it is sometimes difficult to realise all at once that what was right yesterday is wrong to-day. Before May 1st of this year certain drugs could be bought and sold by all and sundry, but no sooner had the month begun than dealing in those drugs became subject to hard and fast rules. The child had to stop playing with nuts; and who can blame him if he thought it strange that he was no longer allowed to do it? Some people may do things which others may not do; what is lawful for some is not lawful for all. For instance, a chemist may not sell amidopyrine or barbiturates except under well-defined conditions, one of which is that the records of the sales must be subject to inspection. On the other hand, a medical practitioner may supply these and other fourth-schedule poisons to his patients provided he keeps records of the transaction; but these records are not open to inspection. It is alleged that a few medical practitioners who prior to May 1st had written prescriptions containing barbiturates have since that date supplied barbiturates to their patients instead of sending them to the chemists with fresh prescriptions. The chemists, as we learn from our contemporary the *Chemist and Druggist*, fear that this may become an extensive practice and see in it a danger to their livelihood. We do not think there are good grounds for this fear. What has happened is probably this. The draft poison rules have been the daily diet of pharmacists for a long time past, whereas the actual rules came almost as a surprise to most members of the medical profession since they are affected by them to a comparatively small extent only. One may well imagine a busy practitioner saying to himself, "Why all this fuss? I agree that barbiturates should not be available to everybody, but I know what my patient needs and since it is lawful for me to supply him with it I shall do so." The idea that the new law is

going to turn prescribing doctors into dispensing doctors is, in our view, fantastic. But it might be a sympathetic gesture, on the part of those medical practitioners who are inclined to do what the law entitles them to do, to fall into line with the newly created circumstance. What is lawful is not always expedient.

SIR RAYMOND CRAWFURD AND EPSOM COLLEGE

AT the annual meeting of the governors of Epsom College on June 26th the election of nine foundation scholars was reported; their names will be found on p. 41 of our advertisement columns last week. Lord Leverhulme was able to give the gratifying information that the King had consented to become patron of Epsom College, thus ensuring the continuance of royal patronage since the foundation of the school in 1855. He also reported the resignation of Sir Raymond Crawfurd from the chairmanship of the council, of which he is to remain a member. Sir Raymond joined Epsom College council in 1915. He was chairman of the school committee from 1918–21, vice-chairman of the council from 1921–23, and chairman for the 13 years since. He has made the position difficult for his successor, for he has not only written thousands of letters in his own hand and collected large sums of money, but he has been the prime mover in securing the admission of medical women to the benefits of the foundation, the abolition of voting, and the passing of an Act of Parliament making these and other administrative changes possible. As time has gone on his work for the school has increased in many directions, but perhaps his main objectives may be described as the raising of the standard of scholarship in the school, improvement in the rates of pay for masters, and increase in the number of open entrance scholarships. Sir Raymond was himself responsible for the planning of the biology block and for the arrangement of the specimens in the museums where boys learn biology through nature study. Almost single-handed he raised sufficient money to enable the school to build and equip the finest sanatorium in the country. It is a happy retrospect for the retiring chairman.

TUBERCULIN SURVEYS OLD AND NEW

THE renewed activity noticeable in the tuberculin surveys undertaken in different parts of the world is probably due, to a certain extent, to significant discrepancies detected when the findings of more than a score of years ago are compared with those of to-day. This alone would justify such an extensive investigation as that of Dr. Marcel Gillard, who has undertaken more than 10,000 tuberculin tests in school-children in Belgium, and who has published his findings in the *Presse Médicale* for May 27th. To anticipate one of his findings it may at once be stated that the comparatively high proportion of negative reactors to tuberculin at different ages is, in his opinion, a sign that the proportion of persons infected with tuberculosis is less now than it was a generation ago; this change cannot be explained away as fictitious on the assumption that all the older tuberculin surveys were conducted in a heavily infected milieu. Confronted by the choice between the Pirquet and the Mantoux tests, Dr. Gillard dispensed, as a rule, with both as being calculated to alarm the children and drive the parents to recriminations. Preference was, therefore, given to Moro's test with a tuberculin ointment. Hamburger has rendered this test more sensitive by increasing the concentration of tuberculin in the ointment and by giving the skin a preliminary rub with ether. In a series of tests with Pirquet's and Moro's reactions, Dr. Gillard has found that Moro's is the more sensitive of the two up to the age of 12 years. It is the less sensitive of the two after this age, and is useless in adults. It was found that at the age of 3 years six children out of every seven gave a negative reaction, whereas at the age of 8 years only three out of four did so. At the age of 12 years two out of every three children were found to be negative reactors. It might have been anticipated that rural communities would uniformly show a higher rate of negative reactors than urban communities; but this was not the case, and it would seem that density of population is not the only factor influencing the "index of tuberculisation." In several rural communities far from any large centre, and with a population of 1000 or less, the proportion of positive reactions was remarkably high. With the improvement in communications by road and rail to-day, the country is daily becoming more urban and the town more rural.

BIRTHDAY HONOURS

AMONG the knighthoods conferred by the King last week we regret the omission from our list of the name of Dr. Henry Tristram Holland, C.I.E., who is in charge of the Church Missionary Society Hospital at Quetta which was destroyed in last year's earthquake. Dr. Holland, who has lived for 36 years in north-west India, and holds the Kaisar-i-Hind gold medal with bar, is now on his way to England. We should also mention the M.B.E. conferred on Dr. Arthur James Keevill, for public services in Tanganyika Territory, and on Dr. Sura Rajagopal Nayudu, acting chemical examiner in Madras. We take the opportunity of repeating here the conferment of the C.B. (Military Division) on Air Vice-Marshall Iredell and Major-General Skelton, whose names appeared by inadvertence in another category in a few early copies of last week's issue.

Mr. Cyril F. Penton, M.A., Barrister-at-Law, has been appointed senior commissioner of the Board of Control in the place of Mr. S. J. Fraser Macleod, K.C., who has retired from the service. Mr. Penton was educated at Eton and Trinity College, Cambridge, and was called to the Bar by the Inner Temple in 1912. He has been a commissioner since 1931 and now becomes legal member of the Board.

UNWANTED INDICES TO "THE LANCET."—Any reader who has an unbound copy not in use of the index for any of the years 1932, 1933, 1934 (Vols. I. and II.), and 1935 (Vol. I.) would greatly oblige by posting the same to the Editor of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2.

THE second congress of the International Society of Gastro-enterology will take place in Paris on Sept. 13th, 14th, and 15th under the presidency of Prof. Pierre Duval. The main subjects for discussion will be the early diagnosis of cancer of the liver and acute and chronic intestinal obstruction. Sir David Wilkie will be among the speakers on the second subject. The British secretary is Dr. T. C. Hunt, 12, Queen Anne-street, London, W.1.

At the end of the Paris meeting the International Congress on Liver Insufficiency will be held at Vichy on Sept. 16th, 17th, and 18th under the presidency of Prof. Loeper. Papers will be read on hepatic œdema, malarial liver, enlarged liver in children, sulphur metabolism, the liver from the point of view of surgical intervention, and hepatic drugs.

PROGNOSIS

A Series of Signed Articles contributed by invitation

CVI.—PROGNOSIS IN MIGRAINE

In its severest forms, migraine may constitute a distressing and remitting malady which handicaps the victim throughout his life. Fortunately most cases of migraine are milder, and some indeed are so infrequent in their manifestations, or so responsive to treatment, as to occasion little real disability. It would be valuable to search for any clinical criteria to distinguish the tractable cases from the intractable and so to make a shrewd forecast of the outlook in a particular instance. Unfortunately the published material upon this point is scanty in the extreme. Despite the very great frequency of the malady and its enormous literature, no attempt has been made within my knowledge to discuss prognosis. Of necessity, therefore, much of the following must be in the nature of clinical impressions rather than of assertion based on established data.

Age of onset.—Cases of migraine starting early in childhood usually react to treatment less well than those with an onset in adolescence. Similarly, cases starting relatively late in life—e.g., at the menopause—are often intractable.

Sex.—On the whole female patients respond to treatment as satisfactorily as males. It has seemed to me, however, that the majority of the severest and less amenable cases have occurred in women.

Racial factors are important; in my experience Jewish patients have responded less well than the average. Migraine in coloured subjects—e.g., West Indians—has proved especially stubborn.

Residence.—European victims of migraine are adversely affected by tropical climates.

Occupation is a most important factor in determining the course of a migraine. Patients whose profession entails responsible and exacting brain work, particularly when carried out under sedentary conditions and at high pressure, find themselves at great disadvantage. Thus barristers, teachers, journalists, doctors, heads of important business organisations, often suffer frequent and intense migrainous headaches. When economic circumstances permit of retirement or prolonged holiday, decided improvement usually results. Over and over again we hear the story that a patient's migraine was in complete abeyance during war service, only to reappear after demobilisation. In the same way, an intercurrent illness, or a sojourn at a sanatorium may be attended by complete cessation of the migraine. For this reason, those who belong to the leisured classes or are in a position to retire are capable of great improvement.

There are yet other occupations which may aggravate migrainous tendencies: commercial travellers whose work necessitates long motor journeys; those subjected to prolonged eyestrain, such as microscopists or cinema attendants; or exposure to glare, flicker, or dazzle, such as tinplate workers, may be adversely affected.

Family history.—The presence of a family history of migraine does not necessarily imply a severe or intractable type. On the contrary some of my severest cases have been the only victims amongst their relatives.

Dietetic habits may be significant even when food idiosyncrasies are not operative. Irregular spacing of meals and too frequent attendance at banquets are both very adverse factors. Over-indulgence in tobacco and alcohol seems to play a relatively minor part.

Ætiological type of migraine.—The severest cases of migraine are often those with multiple precipitating factors. Cases of solitary and specific causation may respond to treatment especially if the factor is one which is remediable. "Menstrual" cases and those associated chiefly with eyestrain do well. Biliary and allergic cases are perhaps less tractable.

Frequency and periodicity.—Patients whose attacks are infrequent, even though very intense, are probably better off than the victims of milder but frequently repeated attacks.

INFLUENCE OF INTERCURRENT AFFECTIONS

Mention has already been made of the temporary benefit to the migraine which may accompany an intercurrent illness. Here the ameliorating factor is probably the enforced physical and mental rest. There are other physical events which play a more direct rôle. *Pregnancy*, as is well known, almost always temporarily arrests the migraine, though hyperemesis may take its place. Those rare cases of exacerbation of migraine during pregnancy are often especially difficult to relieve. *Advancing age* usually brings with it a reduction in the severity of the attacks, though recurrent teichopsia may persist as the sole manifestation of the migraine. A temporary exaggeration of the migraine commonly precedes its decline. This is often noticeable during the female climacteric which may be an especially painful episode. Some analogous temporary flare-up may also mark the involution period in the male. *Loss of sight* may bring in its train a considerable measure of relief in the number and intensity of the attacks, for it is striking how rarely migraine is encountered amongst the blind.

The operation of *cranial decompression*, carried out for any coincidental reason, may be followed by striking and permanent improvement in a patient with migraine. It is not accurate to assert, however, that the attacks necessarily cease in a person whose skull has been trephined. In the same way, a severe head injury with fracture of the cranium may apparently arrest the migrainous seizures.

SYMPTOMATOLOGY OF THE MIGRAINOUS ATTACK

The characters of the attack itself offer some clue to its curability, though little or none as to the likelihood of its repetition. Cases with headache only, even though severe, respond well to medication. When headache is preceded by teichopsia, the outlook is also good, for advantage may be taken of the prodromata to avert the attack. Where headache is followed by prolonged vomiting, the prospects of relief are much more slender; for while medicaments can check the headache they rarely influence the vomiting.

The occurrence of migrainous neuralgia of the face or neck is a criterion of severity and indicates a certain resistance to ordinary lines of treatment.

RELATIVELY INTRACTABLE CASES

One can isolate certain clinical groups in which treatment seems to afford little or no material benefit.

(1) *Lack of perseverance.*—Some patients will not persevere with a consistent line of treatment, whether

because of the handicap of wealth, or of a smattering of medical knowledge or merely an inherent infirmity of purpose. Thus the titled patient who meanders from one consultant to another and is faithful to none, and has already tried this remedy and that, has gone far on the road to permanent invalidism. The nurse, the pharmacist, the medical student, and even the doctor are bad patients in respect of migraine as of other ailments.

(2) *Intolerance to luminal.*—Some patients cannot tolerate luminal, or have tried this drug without obtaining benefit. It is a good working axiom that when luminal fails to relieve migraine, considerable difficulty will be experienced in finding medicinal cure.

(3) *Morphine addiction.*—Patients who rely on morphia for the relief of their attacks respond badly to other treatment. For this reason one cannot too strongly condemn opium derivatives in cases of migraine. Morphine addiction, however mild, erects an almost insuperable obstacle to the rational cure of this malady.

(4) *Hypotension, debility, and asthenia.*—In chronic migrainous sufferers who have developed this characteristic condition a vicious circle is easily formed, leading to an exaggeration of the attacks; it may be a matter of considerable time and difficulty before this complicating factor is eradicated.

(5) *Psychological factors.*—In cases of migraine closely associated with tangible and inescapable psychological factors medicinal treatment is obviously of scant value. One has merely to recall the recent personality and environmental studies of migrainous patients made by G. A. Touraine and G. Draper[1] to realise how closely associated may be various domestic situations. Although psychological treatment is indicated in such cases, it is noteworthy that it often disappoints, even when carried out by skilled exponents.

[1] Jour. of Nerv. and Ment. Dis., 1934, lxxx., i., 183.

COMPLICATIONS AND LATE EFFECTS OF MIGRAINE

Disabling and debilitating as it is, migraine is only very seldom directly responsible for any fatal event. Exceptions are, for example, the cases of symptomatic migraine due to an intracranial congenital aneurysm or a cerebral hæmangioma. Moreover, one must bear in mind the occasional deaths from accidental overdosage with luminal, or from drug addiction.

Nevertheless, chronic severe migraine may lead to certain serious and even disastrous complicating affections. Chief among them is cerebro-vascular degeneration, which must be definitely admitted as a not infrequent effect of lifelong migraine. Some authors have noted a tendency towards premature ageing in migrainous subjects. In addition to this cerebral arterio-sclerosis and all its attendant manifestations there are the dramatic permanent paralyses which may be ushered in by one of the patient's usual attacks of migraine. Thus a paralysis of the third nerve (migraine ophthalmoplégique), of the oculosympathetic, of the face (facioplegic migraine) may occur and persist. Thrombosis of a retinal vessel may occur in the course of an attack and cause a lasting visual field defect. Much graver is the development of a permanent hemiplegia or aphasia.

E. J. Stieglitz believes[2] migrainous subjects to be relatively resistant to acute infections. In his experience upper respiratory infections are very rare, and rheumatism excepted, other infective disorders are unusual. He believes moreover that the migrainous run relatively afebrile courses during their intercurrent affections. But we must remember that the presence of a chronic migrainous debility and low blood pressure may so reduce resistance as to permit the establishment of some intercurrent infection or intoxication.

MACDONALD CRITCHLEY, M.D., F.R.C.P.,
Neurologist, King's College Hospital.

[2] Amer. Jour. Med. Sci., 1935, clxxxix., 350.

SPECIAL ARTICLES

SCOTTISH HEALTH SERVICES

REPORT OF THE DEPARTMENTAL COMMITTEE

ALMOST exactly three years ago the Secretary of State for Scotland appointed a committee with the following reference:—

> To review the existing health services of Scotland in the light of modern conditions and knowledge and to make recommendations on any changes in policy and organisation that may be considered necessary for the promotion of efficiency and economy.

Among the 18 members of the committee were 6 members of the medical profession: Dr. J. L. Brownlie, Prof. E. P. Cathcart, M.D., F.R.S., Mr. John Jardine, F.R.C.S., Dr. A. S. Macgregor, Mr. Alexander Miles, F.R.C.S., and Mrs. A. M. Chalmers Watson, M.D. The Hon. Sir J. C. Dove-Wilson was appointed chairman with Mr. Niven F. McNicoll, of the Scottish Department of Health, as secretary. On the death of Sir John Dove-Wilson Prof. Cathcart succeeded him as chairman; Dr. T. Ferguson took Dr. Brownlie's place when he fell ill. The committee held 88 meetings and took evidence from 76 bodies represented by 215 individuals, as well as from 22 witnesses who submitted personal evidence. The inquiry aroused widespread interest in Scotland and there was a generous response to requests for evidence and other help.

As the opening sentence of the report[1] runs, "The remit is very comprehensive." The terms of reference did not restrict the survey to statutory services and, in fact, called for a review of all that is done to safeguard and promote the health of the people of Scotland. The committee admit to some difficulty in knowing how to begin and the first section of the report recounts the growth of the health services, in order to bring out the expanding conception of public health, goes on to review the growth and distribution of population, its social and economic conditions, the state of health of the people, and concludes with a statement of the general lines along which health policy should, in the committee's opinion, now be directed. Parts II. to IV. review in succession the existing services and consider what changes in policy and organisation are necessary. Part V. presents a general conclusion and summary. Many adjustments and some substantial extension of the existing services, it is found, are required to make full use of modern knowledge and to raise the

[1] Department of Health for Scotland. Committee on Scottish Health Services Report. H.M. Stationery Office. 1936. Cmd. 5204. Pp. 404. 6s.

standard of health of the people of Scotland. "We submit," the committee concludes, "proposals for these adjustments and extensions within the framework of a national policy that will aim primarily at the promotion of health."

The report, long as it is, must be read as a whole by all serious students of public health problems. We append a few selections from the summary of findings and recommendations which will give an idea of the general trend of the proposals.

A National Health Policy

Changes in the size and distribution of the population, in social and economic conditions, in the habits and outlook of the people, and in the actual causes of death and ill-health require a readjustment of health effort. The existing health services are not fully adapted to modern conditions and outlook, and it is inherent in their more or less haphazard and sectional growth that they do not constitute a national health policy. The first essential, in order to avoid overlapping, to secure a full return for expenditure, to keep the services in line with changing circumstances, and to secure that emphasis is distributed according to the social value of the varied services, is to integrate the separate services into a national health policy. The general aim of this policy should be to promote the fitness of the people. The need for such a policy is, among other considerations, reinforced by the fact that the people of Scotland are far short of an attainable standard of fitness, the huge communal cost of ill-health, and the prospect of a declining population. Policy should be comprehensive in scope, and should cover the whole field of morbidity.

Heredity

So far as our present knowledge goes, inherited physical diseases are few in number and of comparatively low incidence; they probably exert no significant effect on the general health of the people. Inherent weakness of constitution, not amounting to positive disease, is probably more widespread and has an effect on the quality of the race. Inherited mental weakness, particularly in the form of mental deficiency, is a factor that must be taken into account in social policy. It is impossible to say, on existing data, whether or not inherited defects and weaknesses are increasing or whether the change that is taking place in the hereditary constitution of the race is for better or worse. There is need for organised research in human genetics, and in view of the importance of the subject for health policy, the promotion and encouragement of this research should be a definite function of the central department of health.

Food

Our inquiry has been limited to the bearing of modern knowledge of nutrition and of dietary changes on health policy. The place of diet in relation to the health of the people generally is a much wider issue, and is at present under consideration by the Advisory Committee on Nutrition set up in 1935 by the Minister of Health and the Secretary of State for Scotland. We have found that although there is no evidence of widespread and gross malnutrition, there is a considerable amount of wrong feeding and abundant room for the practical education of the people on the purchasing and preparation of foods. Improved feeding of children would speed up growth and increase resistance to disease.

Supervision of supplies.—Great improvement has been effected within the last few years in the cleanliness and sanitary condition of slaughter-houses, and on the whole it can be said that the supervision of slaughter-houses is now reasonably well carried out. The uniform standard of meat inspection has been a distinct success and on this subject and the supervision of meat imports, the evidence suggests that anything that may be required can be secured by administrative action. The supervision of the milk-supply has been comprehensively reviewed recently by a committee of the Economic Advisory Council, and accordingly we do not submit any recommendations. Proposals for energetic measures to secure a clean and safe milk-supply would evoke a cordial response from local authorities and the medical, veterinary, and sanitary bodies concerned in administration.

Adulteration of foods generally is not now a serious public health menace. From the point of view of health policy, we endorse the recommendation of the Inter-Departmental Committee on Food Laws for an extension of the system of prescribed food standards; and we consider also that measures should be taken to prevent misdescription of articles of food, particularly where articles are advertised as having a special health value.

Education

Education for health should be placed in the forefront of national health policy. It should aim at producing a people who are balanced physically and mentally, who enjoy health, and who take it largely for granted because, by education and training, their outlook and habits are healthy. It should begin in the nursery schools and other similar institutions, which should be increased in number.

The methods and curriculum of the day schools should be revised to continue and develop the training given in the nursery schools, to provide a better balance between physical education, hand and eye training and bookwork, and, in the later stages, to give the children a sufficient knowledge of the mechanism and of the working of the human body to enable them to realise the value of health, to understand the reasons behind their training in healthy habits, and to develop a natural pride in physical fitness.

Health education, apart from in schools, should be made one of the primary functions of the Department of Health for Scotland and a central organisation, representative of all relevant interests, should be constituted to assist the Department in coördinating and developing the activities of all the agencies engaged in this work. It should be a function of the Department of Health to assist in the provision of facilities for healthy recreation, and the Department should have funds at its disposal for this purpose.

It should be made obligatory on local authorities to make ample provision in their housing and town planning schemes for playing-fields and other facilities for healthy recreation: and the local authorities, in coöperation with employers, juvenile organisations, the Playing Fields Association and other bodies, should endeavour to meet the needs of the community for these facilities.

Housing

The great housing programmes that are now under way throughout the country are raising permanently the standard of living of a large part of the population; and there can be no doubt that they will contribute substantially to improved public health and well-being. In the clearance of slums and congested areas, the redevelopment of the cleared areas and the building of new housing estates, the authorities are presented with new and urgent problems of community planning and new opportunities for controlling the development of their areas. The housing schemes must be viewed in relation to well-conceived plans for the development of town and country, in which provision must be made for, among other things, open spaces, facilities for recreation, health, and other public services.

Extended General Practitioner Service

As part of a policy for the promotion of the health of the people, it is necessary to secure that, as far as possible, all members of the community should have available the services of a general medical practitioner. There is evidence from all quarters in favour of the extension of general medical services. At present large numbers of the people are unable to secure the services of a general medical practitioner. This inadequacy of general medical attendance, especially for women and children, adds to the cost, interferes with the efficiency, and prevents the sound development of some of the medical services provided by statute. The local authorities, in this situation, are tending to develop their statutory services so as to fill the gap; this tendency, if left alone, is bound to gather force and to influence, if not determine, the future medical organisation of the country. On grounds

of administrative expediency, therefore, as well as on broad grounds of national policy, it has become imperative for the State to frame a policy to meet the medical needs of at least the dependants of insured persons and others in similar circumstances, and to lay down the lines along which the medical services should develop.

Dependants of insured persons.—The statutory provision for general medical attendance should be extended to include dependants of insured persons and, so far as practicable, others in similar economic circumstances, and all statutory provision for general medical attendance should be coördinated. This coördinated service should be based, as far as possible, on the family doctor, who should act as health adviser and in liaison between the homes of the people and the statutory health services. The basis of employment of the general practitioner should be, as in the national health insurance scheme at present, by contract for part-time services remunerated by capitation fees. The principle of free choice of doctor, as in the national health insurance scheme, should be preserved.

The training of the general practitioner should be such as to develop the preventive outlook and to equip him fully for the rôle of health adviser.

Maternity

The problem of maternal welfare calls for the provision of a comprehensive maternity service with the object of preserving the lives of parturient women, avoiding invalidism among mothers, and preventing the present wastage of infant life. The maternity service should be based on the doctor and midwife acting in concert, supplemented by consultants and institutional facilities. The need for continuous medical supervision by a general practitioner would be met by an arrangement linked up with our proposals for extension of general practitioner services. It should be part of the arrangements with the general practitioner under the maternity service that he should provide continuous antenatal supervision and should be available for consultation at every stage of labour and the puerperium, and should report on the case to the local authority, the report to include the results of postnatal examination.

Better practical training of doctors and midwives, along with other measures, are required to raise the general standard of midwifery practice. An essential step towards raising the standard of practice of midwives is to raise their remuneration and otherwise improve their conditions and status. An adequate service of trained midwives should be introduced. In arranging for the supply of midwives, the authorities should be free to make arrangements with district nursing associations, to contract with individual midwives for prescribed services, or to institute a whole-time service.

Consultant obstetricians should be provided so far as practicable, and the practitioners should be encouraged to use their services. The work of the clinics should be developed in coöperation with the practitioners. There is a serious shortage of hospital facilities, particularly for antenatal care. In providing these, every effort should be made to secure units large enough to justify the employment of a resident medical officer.

It should be a definite function of the maternity service to give advice on medical and general grounds on the control of conception.

Child Welfare

The child welfare movement, voluntary and statutory, has contributed much to the reduction of infant mortality and improvement of child health. The official schemes, however, are seriously handicapped in their preventive and other work by the inadequacy of arrangements for home medical and nursing attention. The provision of domiciliary medical attendance on the lines proposed in previous chapters will meet the most urgent need for children under 5 years of age. The general practitioner should be regarded as an integral part of the child welfare service and schemes should be developed in coöperation with him. A system of periodical medical examination by the general practitioners of children under 5 years of age, with reports to the local authorities, should be developed.

School Health Service

The work of the school health service is seriously hampered by the inadequacy of medical supervision at home. The coördination and extension of medical services which we have proposed should meet the need for domiciliary medical attendance and supervision and enable the authorities to develop their schemes in coöperation with family doctors.

The law should be amended also so as to remove any doubt about the power of authorities to provide meals as a preventive measure. The provision of school meals, subject to approval of local arrangements by the central authority and the exercise of powers of recovering costs, should be encouraged.

The possibility of using the school health service for the examination of entrants to industry should be carefully considered.

Poor-law Medical Service

The poor-law medical service is generally regarded as unsatisfactory, and efforts at improvement cannot overcome the difficulties inherent in the maintenance of a separate service for persons only when they are destitute. The legislature has recognised that a separate local authority hospital service for the sick poor is undesirable; a separate domiciliary medical service for the sick poor is no less undesirable. As a step towards the removal of medical treatment from the poor-law, we recommend that local authorities should be empowered to provide medical attendance for the necessitous, subject to a right of recovery from those who can afford to contribute. The arrangements made by local authorities should be such as to secure that, as far as possible, poverty will not interrupt continuity of medical supervision by the family doctor.

National Health Insurance

The evidence submitted to us from all quarters points to the success of the medical service under the national health insurance scheme. In various chapters we have made recommendations that affect this service. The broad effect of these is to endorse the principles on which it is based and to apply them, so far as possible, in meeting the urgent medical needs of other classes. Our proposals contemplate a coördinated and complete medical service in which the general practitioner, acting normally as family doctor, will act in liaison between the homes of the people and the facilities provided by statutory and other agencies. The coördination of the general practitioner services with the other medical services, in our view, will remedy one of the principal weaknesses of these services as they are organised at present: it seems to us to be essential also for the proper development of the health policy of the nation.

Hospital Services

A serious shortage of hospital facilities in Scotland has continued for a long time. It militates against the ideal of early treatment and, amongst its effects, causes much loss of working time and avoidable expenditure from insurance and other funds. An adequate hospital service is essential for the public health and steps should now be taken to provide it. It is in the interest of the State to foster the voluntary hospital system, but it would be unwise to endeavour to induce the voluntary hospitals to extend their financial commitments much further than at present. The hospital services should be developed by coöperation of voluntary and statutory hospitals and the public authorities but, in the main, financial responsibility for making up the shortage should be placed on the local authorities. A definite obligation should be placed on the local authorities to supplement existing hospital facilities if required by the central department to do so. The local authorities should be assisted by a special grant for this purpose.

Representatives of voluntary hospitals of Scotland have submitted that the voluntary hospitals should be recognised as an integral part of the national health services and as a corollary are prepared to accept a measure of supervision and guidance from the Department of Health for Scotland. We regard this as essential for the development of hospital services on coöperative lines and in the interests of the voluntary hospitals. We recommend

accordingly that, as with statutory hospitals at present, all proposals for the provision or extension of hospitals by voluntary bodies should require the approval of the Department of Health.

Mental Health Service

The higher average age of the population has been mainly responsible for the increased numbers of insane persons for whom provision has to be made; and it is doubtful whether the incidence of insanity is actually increasing. The growing cost of caring for these persons is causing a good deal of concern among local authorities. The outlook on mental illness has changed markedly in recent times and there is general agreement that the outstanding need is for a coördinated movement to deal with early mental and nervous disorders. The need for this movement is emphasised by the increased prevalence and importance of nervous disorders.

The general medical practitioner, assuming that he has the proper training and the right outlook, should form the first line of attack. The lunacy laws should be revised and consolidated. Revision should provide among other things for the dissociation of lunacy from pauperism, removal of the present restrictions on admission for treatment of voluntary and temporary patients without certification, and generally for the encouragement of early treatment. A definite duty should be laid on local authorities to provide for mental disorders as an integral part of their health services. Additional facilities for diagnosis and treatment of mental illness are required. The provision of psychiatric clinics should be made at general hospitals; and whether or not ward accommodation is provided in ad-hoc mental hospitals or as departments of general hospitals, there should be the closest possible coöperation among all branches of medicine for the active treatment of mental and nervous disorders.

There is room for development of child guidance clinics staffed by expert personnel; education authorities should be empowered to provide or combine with other authorities in providing these clinics or to assist voluntary bodies to do so.

The law relating to mental deficiency should be amended to give a more satisfactory definition of mental defect, to enable children under 5 to be placed in institutions without recourse to certification, to extend the powers in relation to the training of children and young persons, and to make more satisfactory provision for after-care. There is a serious shortage of institutional accommodation for mental defectives.

Industrial Health Services

The opportunities presented by the medical examination of young entrants into industry should be more fully utilised. The examination should be thorough in scope, so that it may be of value not only to the young person but also in the collection of information for national health purposes. It should be followed by treatment of any disability that may be found and should be supplemented as a routine measure by a re-examination after a suitable period. The possibility of transferring the examinations to the local health authority should be seriously considered by the departments concerned.

Nursing and Allied Services

An adequate service of home nurses, acting in coöperation with the family doctor, is an essential element of a complete health service. A general power should be conferred on local authorities to survey the home nursing facilities in their areas and to make such further arrangements as may be necessary for an adequate home nursing service. The proposals of the local authorities should have regard to the desirability of coöperation with the existing nursing agencies and should be submitted in the form of schemes for approval of the Department of Health for Scotland.

A full review of the work and status of the home nurse, health visitor, hospital almoner, and ancillary professions engaged in welfare work should be carried out after the extended medical service which we have recommended has been in operation for some years. In the light of this review, definite national standards of qualifications for the work done by home nurses, health visitors, and related professions should be laid down and no person should be appointed for full-time employment on the relevant duties unless she holds the prescribed qualifications.

Dentistry

The value of dentistry as part of preventive medicine and the need for a greatly extended dental service are universally recognised. We do not consider it practicable to establish a complete service at present and we take the view that effort should be directed in the main to prevention and treatment in the early years. The school years offer the most favourable point of attack on the problem of improving the dental conditions of the people and we recommend the progressive development of a school service on the lines proposed by the dental organisations. The school service should include instruction in dental hygiene and should be supplemented by as much dental work as possible under maternity and child welfare and other schemes. Action on the above lines, we believe, would meet the most urgent need and would substantially reduce the cost of dental treatment and prevent many disabilities in later life.

Medical Supervision of General Practitioner Service

The object of supervision of the general practitioners is to secure a high standard of service. There are wide fields, however, of individual judgment and skill in general medical practice that disciplinary action cannot enter and where attempts at minute control and supervision would be harmful. The quality of the services will depend on the quality of the entrants. If the principle of non-selective entry to the general practitioner service is to be retained, it will be necessary to take measures to raise the standard of entrants. The isolation of the insurance practitioner does not make for high standards of service, and it is, in our view, one of the chief merits of our proposals for a coördinated extended medical service, that they will bring the practitioner into direct and frequent contact with the diagnostic centres, clinics, hospitals, and consultants at the disposal of the authorities. These contacts will be a powerful aid towards raising standards.

We assume the continuance of the obligation to keep medical records and, generally, of the administrative measures which the Department of Health for Scotland may consider necessary for supervising the service. The Department should have on their staff a number of medical men, with wide experience of general medical practice and qualities of tact and judgment, whose primary duty it should be to keep in touch with general practitioners to give them advice and help. The referee and second opinion work, which is done at present by the regional medical officers, should be closely linked with the diagnostic centres, clinics, hospitals, and consultants at the disposal of the local authorities.

The existing disciplinary procedure is unnecessarily elaborate and cumbersome, involves the central department in too detailed responsibility for discipline, and places too great responsibility on medical men in small areas for judging their neighbours and colleagues

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MEDICINE AND THE LAW

Widow's Unsuccessful Action for Professional Negligence

SITTING without a jury at Bristol assizes, Mr. Justice MacKinnon gave judgment last week in favour of a doctor against whom damages had been claimed for professional negligence. The judge was evidently of opinion that, at one point or another, there had been some lapse from the highest standard of professional care; but he held that the death of the patient (the cause of the action for damages) was not due to anything the doctor had done or had failed to do. The doctor's case was put by the Medical Defence Union.

The plaintiff was the widow of a constable in the Bath police force; the defendant had for some

36 years held the post of police surgeon, from which he has lately retired. The constable went sick a year ago and was at once visited by the defendant in the course of his duty. The doctor saw him three days running; there was a conflict about his visit on the fourth day, the widow denying and the doctor affirming that a visit was made. The judge inclined on the whole to believe that the doctor probably paid this questioned visit—a point of some significance since non-attendance was one of the alleged acts of negligence. On the day after, a Sunday, the doctor did not see the patient, nor did he visit him on the Monday until summoned by a personal visit of the plaintiff during the afternoon. It was then clear that the patient was suffering from quinsy. There appeared, said the judge, to be two schools of medical and surgical thought as to treatment of quinsy: one school thought it better to assist nature by making an incision and opening the abscess, the other preferred to leave nature to herself and to await the bursting of the quinsy. The defendant doctor, the judge observed, belonged to the latter school and nobody had suggested that it was professionally improper to proceed on these lines and to refrain from recourse to surgery. The quinsy broke early on the Tuesday morning and normally that event would have been the beginning of the patient's convalescence. Unfortunately the doctor did not visit the patient and was told by telephone (through a chemist who lived near the constable's home) that the patient was still very ill, suffering much pain from a swelling on his face and with some blood showing in or near his right ear. The doctor replied that the wife should continue with hot fomentations and that he would call early in the morning. Meanwhile, according to the facts found by the judge, an unusual development had occurred. The quinsy having burst, there was a swelling of the parotid gland, a rare condition more often a sequel to typhoid fever or to abdominal injury. When the defendant doctor saw the patient early on the Wednesday morning, he advised removal to hospital for observation and skilled nursing. At the hospital it was decided to open the man's cheek in view of a possible abscess in the parotid gland. For this exploratory purpose a general anæsthetic was given: unhappily pus stopped the patient's windpipe: as he was under the anæsthetic, nature's remedy of coughing did not take place and the man died of suffocation. Death was therefore due to the decision made by the hospital staff, with which the defendant doctor had nothing to do. The plaintiff's particulars of alleged negligence had included a statement that, but for the negligence of the defendant, the anæsthetic would not have been necessary. This, said the judge, was the only way in which the defendant could have been fixed with liability and it was not enough for the purpose: conceivably an allegation of negligence might have been made against the hospital doctor or surgeon, but the judge was satisfied that the decision at the hospital was, as one of the expert witnesses had said, "the sort of risk a surgeon has to take." It was therefore clear that the death was due to the exploratory operation at the hospital (which the defendant doctor had in no way ordered), and that the operation was due to the exceptional occurrence of the parotitis (for which defendant had not been treating the patient).

A NEW KIND OF ATTACK

The judge dealt seriatim with the other allegations of negligence, such as failing to send medicine. Complaint had been made that the doctor, during his earlier visits, felt the patient's pulse but did not take his temperature. The judge thought the doctor should have taken the temperature. The worst fault that he associated with the defendant was the failure to visit the patient on the Sunday and again on the Tuesday night when the telephone message had mentioned blood at the right ear. On the other hand, the defendant's version of the facts was that he repeatedly told the patient and his wife "I will come if you let me know I am wanted": the court thought there might have been some genuine misunderstanding here between the parties. The key to the court's decision was in these final observations of the judge: "So far as I can judge, upon the expert evidence I have heard, I do not think that anything the defendant failed to do, or did do, contributed either directly or indirectly to cause the patient's death; that being so, although in certain respects the defendant did not satisfy that standard of care and skill that we all happily are able to expect from doctors and general practitioners, the claim, I think, fails; there must be judgment for the defendant." Without disrespect to the law, one might add that the doctors have, by a recent legal change, become exposed to a new kind of attack. The old maxim that a personal action died with the person has been abolished by statute. When the breadwinner has unfortunately died of some illness or accident which medical science has failed to remedy, it is not surprising that the widow should feel that some better inspired diagnosis, some different treatment, or some more exclusive attention would have saved her husband's life. At once there is the possibility of an action for negligence. It may be answered that the law will take care that such actions do not succeed unless negligence is properly proved. The medical practitioner will rejoin that a verdict for the defendant doctor with costs is no compensation for the distractions and anxieties of unwanted litigation. Cross-examination is an unwelcome experience in itself. In the case under discussion cross-examining counsel fired this final shot at the defendant doctor: "I think you have resigned since this episode?" The insinuation was obvious. The question, reserved for the end of cross-examination and certainly not put without tactical object, implied that the doctor had either resigned out of a sense of guilt or had been pressed to give up his work because it was unsatisfactory. The witness replied that he had always said he would retire at the date when he actually gave up his post; his resignation had nothing whatever to do with the illness and death of the plaintiff's husband. The point was not perhaps material as the judge was sitting without a jury; the veiled attack might be forgotten by the court when judgment had been given; but it is the sort of question that even a successful defendant cannot fail to remember.

Postponed on Illness of Defendant Doctor

Another action by a widow against a doctor, claiming damages for the death of her husband, was begun last month before Mr. Justice Greaves-Lord and stands adjourned indefinitely owing to the illness of the defendant. In this case (Connolly *v.* Rubra) the plaintiff alleges that the defendant doctor diagnosed bronchitis when called in to attend the deceased in December, 1930, that he remained in regular professional attendance until the patient's death in July, 1933, from tuberculosis, and that he failed to diagnose tuberculosis or to make a sufficient examination for symptoms of that disease. The case, as opened by plaintiff's counsel, was that the doctor had neither had recourse to X ray examination nor to sputum tests, and that the only examina-

tions were made by the stethoscope, "an instrument which nowadays had a secondary importance in internal examination." The defendant doctor admits that he diagnosed severe influenza with bronchitis in December, 1930, and that the patient died of tuberculosis in July, 1933, but he denies negligence and in particular he denies that death was due to, or was accelerated by, any negligence or unskilfulness on his part. On the second day of the trial the defendant's counsel applied for an adjournment owing to his client's ill-health. A medical certificate was submitted to the court. Counsel explained that he would be unable to obtain his client's instructions for the purpose of cross-examining the plaintiff. For the plaintiff it was asked that the defendant should be put upon terms, if an adjournment were granted, not to dispose of his property so as to put it beyond the plaintiff's reach if she succeeded in her action. The judge refused to adopt this condition but remarked that, if the defendant had due regard to his reputation, he would presumably take no course which would make any verdict obtained by the plaintiff a barren verdict. The case stands out of the list until next term.

UNIVERSITY OF LONDON

CENTENARY WEEK

THE formal celebrations of the Centenary began on June 29th when a large and cheerful gathering formed themselves into a wedge at the foot of the staircase leading to the Great Hall at South Kensington. From the thin end of the wedge a single red line emerged and passed slowly upwards, for the scarlet gowns of the doctors of all faculties dominated the picture. Lord Athlone as Chancellor stood at the head of the stairs and received the company, who were distributed into seats so skilfully arranged that everyone must have had a good view of the impressive procession to the platform of university officials and honorary graduates-elect.

The Chancellor, with whom was Princess Alice, Countess of Athlone, opened the proceeding by offering to the delegates a welcome as warm as it was whole-hearted, adding a special greeting in French. Messages of greeting and goodwill, he said, had come from almost every corner of the world where education had been grafted on civilisation and their written words would have an honoured place in the University archives. He hoped that delegates would overlook for the present the structural imperfections of the hall, since in the near future the University would have an edifice worthy of any occasion. This great convention was surely a healthy reminder that learning recognised no national frontiers; the whole body of great teachers and the whole band of eager students were truly citizens of the world, and it was those men, whose influence for good was incalculable and illimitable, who were joining to celebrate the completion of the first great stage in the career of the University of London and to wish it well on its further and perhaps not easier climb.

Mr. Maurice Webb, secretary to the Senate, then declaimed the impressive list of universities which had sent addresses of congratulation, while their delegates were presented to the Chancellor in quick succession. The universities and university colleges of England, Scotland, Wales, and Ireland sent their chancellors, vice-chancellors, or principals; from British universities overseas and from universities in America, Europe, and Asia came either high administrative officers or professors. Among the delegates were several medical men, including Sir Robert Bolam, from Durham; Prof. D. F. Fraser-Harris, from Dalhousie, Halifax; Sir James Barrett, from Melbourne; Lieut.-Colonel Hugh Stott, from Lucknow; Prof. R. Busuttil, from Malta; Prof. K. H. Digby, from Hong-Kong; Prof. Jules Duesberg, from Liége; Prof. Nékám, from Budapest; Prof. G. T. Popa, from Jassy, Rumania; Prof. Albert Barraud, from Lausanne; Prof. Hans von Meyenburg, from Zurich; Prof. Rudolf Staehelin, from Basle; and Prof. Nurettin Ali Berkol, from Istanbul. Many teachers in medical schools of the sciences ancillary to medicine were also numbered among the delegates.

Among the academies and learned societies who sent representatives were the Royal Society (Sir William Bragg, P.R.S.); the Royal College of Physicians of London (Lord Dawson of Penn); the Royal College of Surgeons of England (Sir Holburt Waring); the Royal Society of Medicine (Dr. Robert Hutchison); and the British College of Obstetricians and Gynæcologists (Sir Ewen Maclean). The Royal Statistical Society was represented by Lord Kennet of the Dene, recently Minister of Health.

HONORARY DEGREES

When the congratulatory addresses had been handed in, the Public Orator, Prof. H. E. Butler, with neat and sometimes humorous epigram presented for honorary degrees the distinguished men whose names were set out in our columns last week. He referred to Sir George Newman, who was the only doctor of medicine among them, as a great public servant who had done work of incalculable value; his term of office as a civil servant had coincided with great legislative changes and under his wise direction revolutions had been smoothly effected; better care for mothers and children, the medical supervision of schools, and the removal of responsibility for destitute persons from boards of guardians to public health authorities were among the important developments that had taken place. His work would live after him and fructify. In presenting Mr. S. A. Courtauld the Public Orator referred to his generosity in endowing the chair of anatomy, the institute of biochemistry, and the clinical research institute at the Middlesex Hospital. Sir Joseph Larmor, a great mathematician, had paved the way for the discoveries of another honorary graduate, Einstein, who unfortunately was not present to hear the tributes paid to him as physicist, musician, and humanitarian. Mr. H. G. Wells was saluted as one whose name was known wherever English books were read, whose taste for scientific romance had doubtless been stimulated by his early studies in this university. Lord Snell, the fair-minded chairman of the London County Council, was regarded as a great helper and ally in the cause of education. No man had more worthily upheld the fame of British science than Sir William Bragg, or was more beloved by his fellow-workers. Prof. Max Planck, foreign member of the Royal Society, was not only a mathematician but a profound philosopher who had lived to see his discovery of the quantum theory extended to well-nigh every branch of physics and chemistry.

CENTENARY DINNER

Lord Athlone, who presided over a large company at the dinner held at Grosvenor House Hotel in the evening, read a message of congratulation and good wishes from the King, who said that the progress of

the new buildings on the Bloomsbury site marked the beginning of a new era as well as of a new century in the life of the University.

Sir Thomas Inskip, M.P., proposing the toast of The University, said that the generosity of the City of London, aided by subsidies from the Government, would enable it to have buildings as beautiful and as well placed as those which graced any university in the land.

Lord Athlone, in reply, said that the thing which most mattered, in his judgment, was the unity of the University. Unity, of course, did not imply uniformity. There were diversities of gifts, diversities of operation, diversities even of method, but the same heart must beat true and steady through it all. The question was often put in all sincerity: "What is exactly the University of London?" and the answer might well be in another question: "What is the British Empire?" The University with its great incorporated colleges, its general and specialised schools and institutions, its far-reaching activities, did on a small scale offer an analogy with the self-governing Dominions, India, the Crown Colonies, and the varied territories over which the King held sway. The one was no less real than the other. Some of their colleges and schools pointed proudly to traditions older than the history of the university itself. The respective spheres of University and college were clearly defined in black and white, but no written statute was of real avail but for that spirit of goodwill, that desire to pull together which was the hall-mark of the London University. They rejoiced to think that their new lodging in Bloomsbury would form a real centre from which all their activities might radiate.

Mr. H. L. Eason, F.R.C.S., the vice-chancellor, proposed the toast of The Guests. He said that no one in the University, who had seen the impressive ceremony at South Kensington that afternoon or the great gathering that night, could fail to be overwhelmed by the goodwill displayed to their University, even though it was, as universities go, but a child. Those who remembered the opposition to its foundation and the apprehensions that were aroused by the institution of a new centre of education with the peculiar characteristics of the University of London, must be struck by the entire change of atmosphere and by the universal sympathy and kindness with which the University was now regarded. This great assembly, together with the messages of goodwill received, was a token that the ideal that should underlie all Universities was not forgotten—namely, that academic learning should have no boundaries of space, nationality, religion, or politics. Without this spirit learning would have disappeared in the Middle Ages, and there never was a period in the world's history when the maintenance of complete academic freedom was more urgently needed than to-day.

Prof. L. Cazamian (Paris), Mr. G. H. Wilson (Cambridge), Prof. L. P. Eisenhart (Princeton), and Lieut.-Col. Sir James Barrett, M.D., M.S. (Melbourne), responded and wished the University of London many happy returns of the century.

LIBRARY OF THE ROYAL SOCIETY OF MEDICINE.—The library of this society will in future be open throughout August from 10 A.M. to 10 P.M. on ordinary weekdays and from 10 A.M. to 6.30 P.M. on Saturday. These are the usual times of opening and closing for the rest of the year. Formerly during August the library was only open for a shorter period. On Tuesday, July 28th, and on Monday, August 3rd, the library will be closed all day.

KING EDWARD'S HOSPITAL FUND FOR LONDON

THE annual meeting of this Fund was held at St. James's Palace on June 26th. The Duke of York was in the chair; six weeks before he had been appointed president of the Fund by His Majesty the King who had been graciously pleased to take his late father's place as patron.

The Duke of York read the following message from King Edward:

"Although I have laid down the office of president, which I had held for 16 years, I shall continue to take a close interest in all that concerns the King's Fund and the hospitals. I have become very familiar with its organisation and its numerous activities, and I would take this opportunity of thanking the Council and all the other members of the Fund with whom I have had the pleasure of working for so long as president. I am glad to learn of the progress made with several items to which I referred when presiding, for the last time, at the council meeting in December; notably the completion of the first distribution in aid of district nursing work for hospital out-patients; the passing of the Voluntary Hospitals (Paying Patients) Act; and the recent developments in connexion with the radium belonging to the Fund. I am happy that my brother, who has always shown keen interest in our national welfare and deep sympathy with those who suffer, should succeed me as your president, and I know that he will receive the same loyal support that you gave me throughout my term of office."

His Royal Highness, continuing, said that the presidency of the King's Fund was a symbol, and a practical expression, of interest in each and all of the hospitals receiving grants. It was a privilege because of the names of the three who had held the office before him, and because of what they had done for the Fund. It was also a responsibility, because of the exceptional powers and duties of the president.

Speaking of the work of the King's Fund, he went on to say:

"The annual distribution itself means work throughout the year. The accounts of nearly 150 hospitals are gone through. The hospitals themselves are inspected. My first act as president was to appoint this year's visitors for the purpose. All building schemes are examined. A pension scheme for nurses and hospital officers has been started, and has been helped by special grants for its first seven years. At the request of the Bank of England, the King's Fund now allocates on its behalf its contributions to hospital appeals. A report has been published on time-saving methods in hospital out-patient dispensaries. For the first time, a distribution has been made towards the cost of district nursing work for hospital out-patients. This also will help to reduce out-patient waiting. A Bill has been promoted in Parliament to remove obstacles to the provision of pay-beds. Various methods have been adopted to make the King's Fund radium more useful to the hospitals to which it is lent. I see a reference to a second very generous gift of £10,000 from Mr. Roger Parr for this side of our work. There are reports on the financial progress of the hospitals during 1935, and on the work of our propaganda committee in aid of the hospitals and of the King's Fund itself. These are only examples of the way in which the administrative work of the King's Fund as a central body has grown up under its first three presidents.

"I come now to the financial side of the King's Fund, as a collecting and distributing body. During the presidency of King Edward VII. the annual distribution rose to £50,000. Under King George, as Prince of Wales, it grew to £150,000. Last December, just before the present King ceased to be president, the ordinary distribution was £300,000; and there was also a special Jubilee distribution of £120,000, and pension grants of £5000; a total of £425,000. But here I find myself, as your new president,

faced with a real difficulty. I understand that the ordinary distribution was increased to £300,000 in 1932 to help the hospitals in the national crisis. The whole of the increased amount has hitherto been provided out of current revenue. But this last year the income fell short of the outgoings by £7000, after including a wonderful anonymous donation of £15,000. And I am told that changes in the yield of investments will cause further decrease. A fresh effort is therefore needed in order to continue the progress which the King's Fund has made under its three previous presidents. This can be done if we enlist new supporters from the numerous London institutions and businesses which are now enjoying more prosperous times."

He concluded with a testimony to the interest that King George never ceased to take in the King's Fund, of which he was president for nine years and patron for twenty-five. There was still later evidence which he was happy to disclose to them. King George was an annual subscriber of £1000, and one of his very last acts was to honour the King's Fund with a capital gift of £20,000, of which the income would form part of the annual distribution. Every year the accounts of the Fund would thus contain a record of His late Majesty's constant interest in its welfare, and every year his gift would bring benefit to the hospitals of London.

ACCOUNTS FOR 1935

Sir Edward Peacock, hon. treasurer of the fund, in moving the adoption of the accounts, referred to the deficit of about £7000, which he wished to put in its proper perspective.

The distribution had been increased to £300,000 to help the hospitals in the crisis of 1932, and the remarkable thing was that so large an amount had been provided out of current income for so long. The total receipts for the year, including receipts for capital account and for special purposes, came to no less than £335,000. The grants to hospitals, including £8464 from special funds entrusted to the Council by private donors, including the Bank of England, made a grand total of a little over £433,000. A deficit of £7000 on the ordinary distribution in one year out of nine was not very large when compared with these figures. As regards the future, the increased distribution of £300,000 was still needed by the hospitals. The income of the King's Fund last year included some exceptional receipts. There would be a further reduction in income from investments, partly because of the use of reserves for the Silver Jubilee distribution and partly because of the fall in the value of money. A considerable increase in subscriptions and donations would therefore be needed to make up these losses, to enable the King's Fund to maintain its distribution at its present figure, and to provide for the grants in aid of district nursing work for hospital out-patients.

He warmly supported the Duke of York's appeal for a generous response to what His Majesty had referred to last December as King George's challenge to the present generation. Already there had been some increased receipts. Of these he would specially mention two, because of the source from which they came. His Royal Highness had referred to the fact that King George was an annual subscriber of £1000. King Edward had now increased his own subscription from £200 to £1000; and at the same time the King's Fund would receive an annual income of about £650 from King George's capital gift. Thus those who issued the challenge had also set an example.

The motion for the adoption of the accounts, having been seconded by the Hon. John Mulholland, was then put and carried unanimously.

ANNUAL REPORT FOR 1935

The annual report for 1935 was adopted unanimously. Special reference was made to the receipt of over £14,000 from the sale of seats to view the Jubilee procession. The passing of the Voluntary Hospitals (Paying Patients) Act was a benefit to hospitals generally that the separate institutions could hardly have secured for themselves. The reports of the Distribution Committee on the district nursing distribution and on the King's Fund radium, and of the Revenue Committee were also presented and carried unanimously.

Lord Dawson of Penn, in moving a vote of thanks to the Duke of York for presiding, said that His Royal Highness since the commencement of his public career had shown a constant interest in all that concerned the welfare of the nation and in the hospitals. This involved sympathy towards those who were down on their luck in the time of need, and also an intimate knowledge of all that hospital work stood for, in direct benefit to patients, in the training of future doctors and nurses, and in the furtherance of new knowledge.

LONDON HOSPITAL MEDICAL COLLEGE

Sir William Bragg, O.M., P.R.S., presented prizes and certificates at the college on June 26th, Lieut.-Col. W. Marlborough Pryor, chairman of the College Board, presiding.

Prof. William Wright, dean of the college, referred to the losses the college had sustained by death, by retirement, and by resignation to take up other appointments, and to the honours gained during the year by members of the staff. Structural changes within the hospital included the building of a school of massage, which would provide a complete curriculum in massage, medical gymnastics, and medical electricity, and a swimming bath for the nurses, the cost of which Mr. E. W. Meyerstein had undertaken to defray. In the college the chief structural alteration was an extension of the dining hall, rendered necessary by the increase in the number of students. The hostel which was opened in 1934 continued to fulfil admirably the purposes for which it was designed. The academic successes gained by students had been maintained at a high standard. The college attempted not only to give students a sound theoretical and practical education in all branches of medicine but to stimulate an interest in research in the hospital. Of the researches at present in progress one of the most interesting was the study of cancer cells, by growing them on media outside the body and studying them by means of cinematography. Dr. Dorothy Russell had recently accepted an invitation from the Association for Research in Nervous and Mental Diseases to visit the United States and demonstrate a film illustrating the tissue culture of gliomata. The dean spoke of other research work in progress and of athletic achievement, especially by the sailing club, some of whose members had been chosen to represent Great Britain in the Star class at the forthcoming Olympic Games. On the whole, the dean felt they might be well satisfied with the work accomplished and the progress made during the year.

The chairman then introduced Sir William Bragg, who said that when an ancient like himself came to a gathering of young graduates the thing uppermost in his mind was: How had the growth of knowledge affected the work that those young men had to do before graduating? It was essential to catch up with the ever-growing mass of knowledge and training for any profession—and especially the medical profession, because people whose lives and health depended on the application of knowledge were not

likely to overlook any omission in securing it. Year by year the length of the medical curriculum was extended to try to meet the ever-growing difficulty. Many subjects now incorporated in the work of students were not thought of in Sir William's student days. When X rays first came in, for example, he was a physicist in a distant part of the Empire, and because he possessed a baby X ray tube, 2 inches across, patients were brought to him for diagnosis; he was asked to look for needles in their tissues, and he had to persuade people that he could not cure with this new apparatus infants who had water on the brain. Students now had to learn about the uses of radium and the developments of bacteriology and of biochemistry. Strange discoveries were being made about the many molecules which, sometimes for health, sometimes for disease, played an important part in the human body. That morning Sir William had been looking, with the distinguished head of an institute in Vienna, at the picture which had been unfolded in the last few months of a strange new pigment, known as monasterol blue, which would play an important part in dyes and paints in this country, and which yielded secrets in connexion with the structure of some of the important molecules in the body. Knowledge was growing on every hand, and as it was piled up connexions became apparent between all sorts of effects which had seemed to be disconnected. As the list of subjects which a student must master lengthened, attempts were made to meet the demand by lengthening the course; but this could not be done indefinitely without taking away the very qualities which the student should possess. In mathematics, for example, the questions which used to be asked in the mathematical tripos at the beginning of last century were those now set to fourth form boys at school. This undoubted growth in the grasp of difficult problems could not properly be put down to a change in the intellect of man. It might be accounted for rather by the way in which the information is put before the modern student. Even in athletics things could be done which were beyond the dreams of people who had raced and jumped twenty or thirty years ago. It was common knowledge that records were continually being broken. A great athlete of the past had suggested to Sir William that the change was due really to an increase in knowledge of how to do the thing; for instance, the record for the high jump had risen as men learned to dispose of their body as it mounted over the bar, and the hurdle race had changed by men aiming just to get the foot over the hurdle, and so avoiding an unnecessarily high jump. There was also much improvement nowadays in the ways of presentation of knowledge: there were better photographs, better pictures, and fine films of great educative value.

In the process of gathering up knowledge one important thing had to be remembered: better than knowledge itself is knowing where to get certain information when it is wanted. Anybody, said Sir William, who strives to learn a new subject does better, in a way, if he can so grasp it and arrange it in his own mind that he apprehends the chief trend and leaves the details to themselves. The only way to learn a thing is with pencil and paper in your hand, gathering and noting the main arguments, leaving the details until they are actually wanted. It is by an arrangement like that that mastery of new knowledge can be achieved. Man cannot be merely a library; he must have a little catalogue room in himself, somewhere in which he can know where he can find details concerning any particular thing. Sir William himself admired the people who "travelled light," who did not carry a tremendous amount of information with them, but who know how to use information when they had got it. Another way of making use of the knowledge which grows was to preserve a certain alertness of mind, to keep in touch with the new knowledge, so as to be able to make use of it. In the war things which mattered, in the long run, were discoveries made in the course of the war: tanks, the paravane which cut the ropes of moored mines, the instruments to record sound-range, devices for detecting the near presence of submarines. If a nation prepared for war it was not merely gathering together quantities of guns, ships, or even men, though that must be done; what had to be considered was the gathering together of men who in an emergency could think and could put their knowledge to the most practical use. Some of his hearers would become general practitioners with marvellous opportunities to develop the talents, that adaptability which experience brought, those qualities which were utterly important. He thought that a man about to take a practice was in some ways to be envied, because he had material to deal with which was just as interesting, and might be even more difficult than the problems which confronted the man working in the laboratory.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE Admiralty announce that the following promotions have been made, to date June 30th, 1936:—

Surg. Comdrs. to Surg. Capts.: P. L. Gibson and H. B. Parker, D.S.C.

Surg. Lt.-Comdrs. (D) to Surg. Comdrs. (D): F. W. Watt, S. E. Brown, R. M. Finlayson, and L. B. Osborne.

Surg. Lt.-Comdr. A. N. Forsyth to *Capetown*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdrs. E. G. Thomas and R. L. Stubbs to *Effingham*; C. Mason to *Dryad*; and W. J. Payne to R.N. Hospital, Haslar.

Surg. Lt.-Comdr. (D.) H. P. Buchanan to *Victory* for R.N. Hospital, Haslar.

Surg. Lt. E. F. St. J. Lyburn promoted to Surg. Lt.-Comdr.

Surg. Lt. J. F. Heggie to *Dryad*.

Proby. Surg. Lt. E. J. S. Woolley to be Surg Lt.

Proby. Surg. Sub-Lt. R. E. King to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS

Short Service Commissions: Lts. L. C. Card and C. H. George to be Capts.

The initials of Lt. N. A. Flaherty are as now stated and not as in *Gazette* of May 8th (*vide* THE LANCET, May 16th, 1936).

ROYAL AIR FORCE

The Air Ministry announces that the undermentioned promotions are made with effect from July 1st, 1936:—

Group Capt. to be Air Commodore: H. E. Whittingham, C.B.E.

Wing Cmdrs. to be Group Capts.: R. A. G. Elliott and H. L. Burton.

Squadron Leaders to be Wing Cmdrs.: B. F. Haythornthwaite, C. A. Lindup, T. J. D. Atteridge, and V. S. Ewing.

Flight Lt. P. A. Cooper to No. 2 (Indian Wing) Station, Risalpur.

E. H. E. Cross is granted a short service commission as Flying Offr.

INDIAN MEDICAL SERVICE

Col. T. C. C. Leslie, C.B.E. (late R.A.M.C.), has been appointed officiating A.D.M.S., Meerut District.

OBITUARY

CLAUD ALLEY WORTH, F.R.C.S. Eng.

WE regret to announce the death on June 24th of Mr. Claud Worth, one of the best known ophthalmic surgeons of his time. His death took place after a long and painful illness at his home in Falmouth where he had been living in retirement since 1921. It fell to Claud Worth to achieve celebrity in two totally unrelated spheres of human activity, for he was equally distinguished as a writer on squint and as writer on yachting, and his name is recognised as an authority by ophthalmic surgeons and yachtsmen all over the world.

Born at Holbeach of an old Lincolnshire family, Worth studied at St. Bartholomew's Hospital, qualifying in 1893 and taking the F.R.C.S. five years later. After serving as house surgeon and ophthalmic house surgeon at Loughborough, he returned to London to become assistant at the Royal London Ophthalmic Hospital and worked his way on to the staff there, besides holding many other ophthalmic appointments. At an early stage of his career he became interested in squint, and his book, which was first published in 1903, has run through six editions, and has been translated into many foreign languages, was the fruit of much patient and painstaking work. He was a pioneer, as far as this country is concerned, in the treatment by scientific training of amblyopia and defective fusion sense, for the carrying out of which he devised ingenious methods and instruments. Worth possessed, one of his colleagues tell us, a great love for and understanding of children, and these gifts were of inestimable value to him, not only in the study and training of squint cases but also in their treatment by operation. Young children whose confidence he had gained would often submit to operation under a local anæsthetic, their attention being kept off the matter in hand by means of a running fire of amusing talk from the operator. Whether in work or play Worth was indefatigable; he was able to get through his enormous output of writing by doing most of it before other people get up in the morning.

The colleague to whom we owe many of these details writes: "Of his attainments as a yachtsman I cannot speak at first hand, but on more than one occasion I have heard his book on yachting spoken of with enthusiasm as a classic by yachtsmen who were unaware that he had other interests in life. It was a source of great regret to Worth to be obliged because of ill-health to give up his ocean-going craft, but to the end he kept a small yacht for coastal cruising. . . . Claud Worth was a man of a genial and kindly nature, modest and unassuming in demeanour. To his excellent qualities as a host all those can testify who have enjoyed his hospitality, whether at Harley-street or at that yachtsman's paradise on the Helford river to which he retired."

Mr. Worth married Miss Janet Ritchie, who survives him, with a son who graduated at Cambridge as a mechanical engineer.

HENRY PHILBRICK NELSON, M.D. Camb., F.R.C.S. Eng.

THE death of Mr. H. P. Nelson, at the age of 34, from septicæmia, in the high noon of his career, is a tragedy. The results of the struggles of the last ten years had just become apparent and he had achieved a distinguished position among those very few men who were pioneers of thoracic surgery. On May 22nd he pricked his finger with a diathermy needle while operating on a clean case at Brompton Hospital. Several dressings in private had to be done that evening and from one of them infection entered his finger. There followed the next morning all the manifestations of a streptococcal cellulitis, and so rapid a spread throughout his tissues that unceasing efforts were insufficient to save his left arm or stem the tide which culminated in his death on June 24th.

MR. H. P. NELSON
[*Photograph by Elliott & Fry*

The second son of George Nelson, a New Zealand engineer, Henry Philbrick was born at Hawkes Bay on August 21st, 1901. It was soon evident that his father's talent for careful planning and his exceptional manual dexterity were the inheritance of his son. He was educated at Harrow and at Caius College, Cambridge, where he took an honours degree in the Natural Science Tripos. It was not until he began his practical surgical work at St. Bartholomew's that his particular aptitude for it became apparent. He early came under the influence of Sir Charles Gordon Watson, from whom his first surgical inspiration was derived. After qualifying in April, 1926, he was appointed house surgeon to Mr. McAdam Eccles and Mr. Girling Ball, who has described him as the "most brilliant that it has ever been my pleasure to work with." On completing his term of office he became demonstrator of anatomy to Prof. H. Woollard, and held this post till December, 1930. During the latter half of his period as demonstrator of anatomy he did some original and notable work on the tracheobronchial lymphatic glands. In 1928 he was awarded the Luther Holden research scholarship for a year, when he confirmed Helmholtz's work on experimental coli infection in the urinary tract. From January to October, 1929, he was resident medical officer at the Ministry of Pensions Hospital at Roehampton, and it was in connexion with Mr. J. E. H. Roberts's cases of chronic empyema at this hospital that his interest in thoracic surgery was first aroused. In the year 1929–30 he continued his general surgical experience as registrar to the Royal National Orthopædic Hospital and clinical assistant to St. Peter's Hospital for Stone. At this time he published accounts of cases of bilateral congenital elevation of the scapula and impending ischæmic contracture, and later turned his attention to radiotherapy of the thorax, publishing in our columns a study of the irradiation of the tracheobronchial lymphatic glands in the treatment of carcinoma of the lung. This embodied work which proved of distinct value to later workers on the radon treatment of bronchial carcinoma. In January, 1927, Mr. Nelson married Kathleen, daughter

of Mr. Alan Sullivan, and he himself attributed much of his success to her collaboration. The year 1931 marked a turning point in his career. He was appointed instructor in the department of surgery (section of thoracic surgery) at the University of Michigan Hospital, Ann Arbor; and the surgical scholarship of the Association of Surgeons of Great Britain and Ireland enabled him to take up this appointment. By the end of his stay in the United States he was already well known, and in January, 1932, Dr. John Alexander wrote of him: "His operative skill is thoroughly first rate. . . . It is my opinion that Mr. Nelson's training and experience entitle him to be considered one of a really very small group of the most able thoracic surgeons in any country to-day." He returned to take up the post of chief assistant to Mr. Roberts at St. Bartholomew's, and acted as his assistant and deputy at the Brompton Hospital for Consumption. In October, 1932, he visited Sauerbruch's clinic in Berlin. With his appointment as assistant surgeon at Brompton and consulting thoracic surgeon to the London County Council in 1933 success was assured, but it was not until the London Hospital elected him assistant surgeon in March of this year that his highest ambition, that of attachment to the honorary staff of one of the great teaching hospitals, was achieved. Two of his activities deserve particular mention. In collaboration with Sir Pendrill Varrier-Jones he recently founded a surgical department at Papworth Village Settlement, designing and supervising the construction of the operating theatre. At the request of the L.C.C. he set up a clinic of thoracic surgery at St. Andrew's Hospital, Bow, where he enjoyed his collaboration with Dr. J. W. Linnell.

Nelson's published work includes, jointly with Mr. Roberts, the first complete account to appear in this country of the operation of pulmonary lobectomy. He wrote also on chronic empyema, on intrathoracic neoplasms, on collapse therapy in bronchiectasis, and his pioneer work on postural drainage of the lungs carried out during his tenure of an Ernest Hart memorial scholarship has earned wide appreciation. The bed which he designed for the purpose of postural drainage is now being used at several hospitals. His contributions to present-day surgery were original and of permanent value. At the time of his illness he was engaged in writing a volume on thoracic surgery for Messrs. Churchill's "Recent Advances" series. For the two months previous to his death Nelson had been working happily in his new surroundings at the London Hospital, and had regarded his long connexion with Bart.'s as ended. Fate brought him back there, and this time he was not to leave. The efforts made by his late colleagues to save his life were watched with anxiety by the whole medical world, and the sympathy felt with his widow and children is extended to them also.

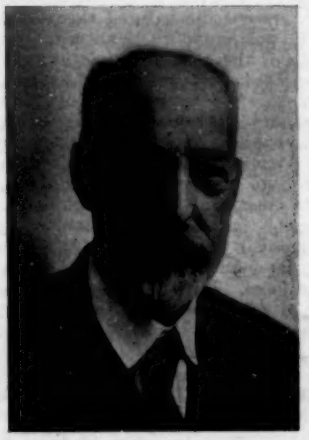
Mr. H. B. Stallard writes: "In the death of Tim Nelson we have lost a man whose directness of purpose, enthusiasm, transparent honesty and inflexible courage in the face of any odds would have surely won him the highest places in our profession. To those of us who were privileged to be his friends and contemporaries at Cambridge, St. Bartholomew's, and elsewhere his memory will remain evergreen. As a student he stood out for his genuine keenness, his capacity for hard work, and a spirit that was never content to rest but had to be ever seeking and in action. In his early days this zeal sometimes led him into difficulties, but his courage and originality in dark moments usually pulled him through. Whilst a resident house surgeon and during the F.R.C.S. course at St. Bartholomew's I saw a great deal of him and became inspired by his method of working, his boundless energy, and his infectious enthusiasm for the task he had in hand. It was evident at this time that he had a mind which rose above examination requirements and that he would achieve real professional success, that of having his opinion sought for and valued by his colleagues. All his dealings were characterised by a directness that was as invigorating to an opponent as to a friend. His humour was whimsical and refreshing, and his loyalty unswerving."

The dean of the London Hospital writes: "While the tragic death of Mr. H. P. Nelson has evoked universal expressions of sympathy, the true measure of the tragedy can only be fully realised by the members of his family, of his immediate circle, and by those who have worked with him at the hospitals with which he was connected. Although the tenure of his appointment at the London Hospital was so short—he only joined the staff four months ago—we know well what a heavy loss we have sustained. Unfortunately while all of us appreciated his great ability, energy, and force of character, none of us had had time to know him intimately. I myself only met him on two occasions but my remembrance of these is vivid. The first was when he called upon me as a candidate for the honorary staff; his easy manner, his frankness and modesty, his generous acknowledgment of the debt he owed in his anatomical work to Prof. Woollard at once won my confidence and regard. The second occasion, less than a month ago, was when we met at Whitechapel St. Mary's Station and walked together to the hospital. His alert step and cheerful manner expressed better than words could describe the life he felt in every limb, and the eagerness and enthusiasm with which he was entering on his morning's work. His death leaves us silent and mourning."

Sir Pendrill Varrier-Jones writes: "It has been one of the principles of Papworth that each department should be built round a personality; and the new surgical unit which it was decided to develop a year or so ago was no exception to the rule. In Henry Philbrick Nelson we had just the outstanding personality to make a success of such an undertaking. To say he had enthusiasm is a mild way of describing his outlook on life. His enthusiasm was not of the youthful variety—though of the joyousness of youth he had his full share—but was rather the enthusiasm born of experience, tempered by expert knowledge. He was no mere technician. Although sufficiently expert in the art of surgery to have earned himself a growing reputation, this expertness was not the sole basis upon which he built up a wide and intelligent outlook on affairs. He had great plans for the future; and, building as he was upon the surest foundations, these plans would surely have matured and developed into a splendid edifice of achievement. To all with whom he came in contact he was a trusted friend and adviser. His personality invariably had a powerful effect upon the whole management of each case; and friendship followed the confidence which he inspired. Nelson was an excellent team worker. Although he might hold, and hold tenaciously, views differing at first from those of his colleagues, his reasoning powers enabled him quickly to convince or be convinced; and then he gave of his best in no uncertain fashion. Large-minded, generous-hearted, with nothing petty about him, it was a source of great pleasure to work with him. He threw himself heart and soul into the Papworth scheme, and the surgical unit became *his* unit."

ALEXANDER BROWN RITCHIE, M.B. Edin., M.Sc. Manch.

Dr. Brown Ritchie, who died at Cheadle Hulme on June 20th, was the first school medical officer for Manchester, holding this position for 27 years until his retirement in 1930. Born at Woolmet, Midlothian, he was educated in Edinburgh and was apprenticed to a solicitor before taking up the study of medicine. Qualifying in 1889, he travelled widely as ship's surgeon before settling down in general practice at Hulme, where he was surgeon to the dispensary and district obstetric physician to the Southern Hospital, Manchester. He had been a member of the general council of Edinburgh University, and at this time was keenly interested in medical polity, contributing an article on the subject to the *British Medical Journal*. In 1903 he was selected by the Manchester Education Committee to become its full-time medical officer, some years before the institution of school medical inspection as now understood. After the passing of the Act of 1907 he assumed entire responsibility for the initiation and development of the scheme in Manchester. The war caused a temporary slowing-down of advance, but after 1918 developments were rapid and owed much to the executive ability which he possessed. Ritchie held the view, which he always maintained, that it was the business of the school medical service not merely to inspect and advise, but to ensure that each individual child requiring treatment should receive it, and he insisted on having an organisation and a staff that would make this ideal a possibility. He had the ultimate responsibility for the selection of children for special schools, both mental and physical, of which Manchester possesses a considerable number, and for some years, until the increase of his administrative duties made it impossible, he personally examined and certified mentally defective children. He was also a governor of the Mary Dendy Institution for the feeble-minded at Sandlebridge. Having been himself a general practitioner, Ritchie never overlooked the interests of practitioners in so far as they were affected by the working of the service, and his personal relations with the profession generally were always friendly. Upon the basis of his own experience, he firmly believed that the best qualification for school medical work was experience of general practice in a working-class district, because of the insight so gained into home conditions.



DR. BROWN RITCHIE
[*Photograph by Lafayette*

Dr. Henry Herd writes: "Ritchie was essentially genial in disposition, although this was at times concealed by a somewhat abrupt manner, apt to be misunderstood by those who did not know him intimately. He was always friendly and sympathetic in his relations with his staff, who responded with an affection which found spontaneous and to him surprising expression at the time of his retiral. He was equally well liked by other education officials with whom he had dealings in the course of his work. He had a fund of quiet humour which emerged not infrequently both in his work and in his moments of relaxation. Members of his staff have happy recollections of the gusto with which he used to relate tales of his sea-going experiences. He was a keen lover of music and in the course of his life gathered a remarkable collection of folk-songs, both Scottish and Irish. It was appropriate that at his burial the 'Londonderry Air' was played as the coffin was carried into church. For many years gardening occupied a great deal of his leisure time; among other things, he had an expert knowledge of British ferns. His holidays during his years of activity were largely devoted to fishing; for many years he went to Donegal for deep-sea fishing. He had a deep love of country life, and spent his years of retirement in quiet spots in Devon and Cornwall."

Dr. Ritchie is survived by his widow.

WILLIAM BAIN, M.D. Durh., F.R.C.S. Edin., F.R.C.P. Lond.

Dr. Bain, well known as a spa physician at Harrogate until his retirement in 1930, died at Cambridge on June 22nd in his eighty-second year. He was born at Harpsdale, Caithness, went to Thurso Academy, and on to Edinburgh for medical study, supplemented at Owens College, Manchester, and St. Thomas's Hospital. After graduating in 1881 he was resident for a time at St. Mary's Hospitals, Manchester, and spent 12 years in general practice at Heaton Chapel. Then, finding in research work the dominant motive of his professional life, he had a period of post-graduate study, during which he took the F.R.C.S. of Edinburgh, and the M.R.C.P. Lond., and settled in Harrogate. This choice was largely determined by the fact that seasonal work in the summer would afford him leisure during the winter to indulge his bent for research. He speedily saw the necessity for experimental work on the pharmacology of the Harrogate waters and carried out a laborious series of original investigations, the results of which appeared in a book, written in collaboration with W. Edgecombe, on the pharmacology and therapeutics of the Harrogate mineral waters and baths. During the winters he worked with T. G. Brodie in the laboratories of St. Thomas's, and afterwards with W. D. Halliburton at King's College on the pathology of gout, the secretion of bile and the mechanism of gall-stone production, and on the problems of hyperpiesia, carrying out long and exhaustive experimental work in the search for pressor bases in the blood and urine. In 1904 he edited a text-book of medical practice, by many contributors, the novel feature of which was the

DR. WILLIAM BAIN

incorporation of an epitome of the anatomy and physiology of each system of the body as a prelude to the description of their diseases. The book met with considerable success and it is a matter of surprise that the fundamental idea, which has much to recommend it, has not been further exploited by others. In 1912 he was elected F.R.C.P.

Dr. Edgecombe writes: "It is not too much to say that Bain, by his work and example, did much to raise spa practice in this country from the level of empiricism to that of rational scientific therapeutics, and to improve the status of the spa practitioner in the eyes of the medical profession at large. He took no active part in public work, though his advice was often sought and followed on matters of policy; his interest lay entirely in the scientific side of his profession. The ethical aspect of his calling was very dear to him and by his scrupulous honesty and integrity he set a worthy example. Though not of an athletic nature he played golf with great enthusiasm. He had a keen Scottish sense of humour, and enjoyed nothing more than sitting up to the small hours puffing cigar after cigar, discussing medical problems and recounting his experiences.

"After his retirement from practice he migrated to Cambridge where he occupied the last years of his life with his ruling passion, continuing his experimental work on the pressor bases and on the pharmacological action of drinking waters, the results of which he published in a small book last year. His memory will long be cherished by the town of his adoption, whose reputation he did so much to enhance."

HENRY ATHILL CRUTTWELL, M.D. Brux., L.R.C.P. Edin., J.P.

THE death of Dr. Cruttwell on June 17th at Guy's Hospital closes a life of singular achievement. Born at Bath in 1867, the only son of a romantic marriage, he went to King's School, Ely, as King's scholar and at the age of 17 spent three years at St. George's Hospital. He broke off his study by entering the service of the Royal Niger Company which appointed him assistant medical officer with charge of constabulary at Asaba, where he built and equipped the first hospital in Nigeria. He had care of the wounded of the Tinineh rebellion and was put in charge of the port of Akasa, from which he was invalided home in 1889. He then resumed his medical work, going to Edinburgh with an exhibition from the Skinner's Company, of which he was a freeman. There he took first-class honours, returned to St. George's Hospital for a year's clinical work, and in 1892 passed the triple Scottish qualification with more honours. No sooner qualified he accepted service as surgeon on a submarine cable ship and, after they had laid two cables, left with the engineer-in-chief of the expedition to tour South and Central America. He practised in London for a few months, when he was commissioned by another cable company to deal with an outbreak of cholera in Teneriffe. It was not until he was 30 that he settled down to practice in this country, first at Hallaton, Leicestershire, where he was elected a member of the Quorn hunt, and from 1899 at Bagshot where he remained the rest of his life. Here he took part in every side of public life, becoming chairman of the Windlesham urban district council and a J.P. for Surrey. At Bagshot he founded a detachment of the St. John Ambulance Brigade and was trustee of the Duchess of Connaught Memorial Nursing Home as well as people's churchwarden at the parish church. He made a hobby of genealogy, writing a chronicle of the Cruttwell family and compiling, with H. W. Garrett, the Register of King's School, Ely. With this background it was natural that he should be accounted a fine raconteur, with a never-failing store of reminiscences of people and things all over the world.

Dr. Cruttwell was twice married; his only daughter Myra is now Mrs. Wright Jamieson of Vancouver.

Fleet Surgeon A. G. P. GIPPS, R.N., who died on June 25th at the age of 81, was educated at St. Bartholomew's Hospital. He qualified M.R.C.S. Eng. in 1877 and took the F.R.C.S. Edin. in 1891. After residence at the Royal Free Hospital, London, and the Kent and Canterbury Hospital, and gaining some experience on R.M.S. *Asiatic*, he entered the Royal Navy in 1879 and was appointed surgeon on *Minotaur*, the flagship of the channel squadron. In 1882 he was surgeon on *Inconstant* during the Egyptian war, gaining the Egyptian medal and the Khedive's bronze star. He was next staff surgeon on *Malacca*, serving in the punitive expedition which ended in the capture of Benin City in 1897. About this time he wrote several letters to our columns on tuberculosis and its open-air treatment in the High Alps. He became fleet surgeon in 1899 and retired soon after, but on the outbreak of war in 1914, when nearly 60 years old, he joined the R.A.M.C. with the rank of lieut.-colonel, doing useful work in France and in charge of army hospital ships, notably *Asturias*, when he was given the D.S.O.

FELLOWSHIPS FOR RESEARCH IN TROPICAL MEDICINE

THE Medical Research Council, advised by the tropical medical research committee which they have recently appointed after consultation with the Colonial Office, announce that:

Three *junior fellowships* are offered immediately, for award to qualified medical men wishing to receive training with a view to careers in research work in tropical medicine. Preference will be given to candidates who have already had preliminary experience of methods of research. Subject to satisfactory reports, the fellowships will be tenable for three years, the first to be spent at a school of tropical medicine, the second in research at some institution at home, and the third largely in work under direction at some centre in the tropics. The stipend will be at the rates of £300, £400, and £500 per annum in the successive years, with an additional allowance during service abroad and necessary expenses.

In three years' time a *senior fellowship* for a further period of three years' research work in the tropics at £600 rising to £750 per annum, with an allowance and expenses, will be available for at least one of the junior fellows. The Council are also prepared to consider immediate applications for senior fellowships from candidates who have had adequate experience in research work not necessarily in tropical medicine.

Permanent appointments.—The Council intend to establish in due course, as suitable investigators become available as the result of the fellowships scheme, permanent and pensionable appointments for research work in tropical medicine, including senior posts. Members of this research staff will work partly in the tropics and partly at home. The exact terms of service are still undecided, but they will be not less favourable than those which apply to other Government appointments at home or overseas for men of similar professional standing.

Inquiries may be addressed to the Secretary, Tropical Medical Research Committee, 38, Old Queen-street, London, S.W.1, with whom applications should be lodged not later than October 1st, 1936.

GRAINS AND SCRUPLES

Under this heading will appear week by week during the summer the unfettered thoughts of doctors in various occupations. Each contributor will be responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A WEST-COUNTRY PRACTITIONER

THERE is nothing like medicine for keeping a man humble. Which of us, in our nonage, has not had an argument with an indignant mother of ten as to the exact pathological significance of a rash—and been wrong? And so many things happen not according to the book. We can all quote odd cases, and when two or three of us are gathered together, we can hardly listen to the other fellow's story so anxious are we to cap it with an even more remarkable experience of our own. Two such cases in which I did not shine stick in my mind. The first was that of an elderly cow-doctor—he could hardly be called a vet.—who, having been ill for a week with abdominal pain and vomiting finally sent for me. He had a tender lump in his right iliac fossa as big as a fœtal head. In conjunction with the history and other physical signs it was not difficult to diagnose an appendix abscess, and I ordered him to hospital. He refused to go, insisting that all he wanted was a bottle of something, he may have called it a drench, to "pass it on." Three-quarters of an hour of fruitless argument ensued and I lost my temper. He would die and I washed my hands of him. Next day I called expecting to find him moribund from spreading peritonitis, but to my astonishment he was much better. He had had "the use of his body" (west country for a movement of the bowels), and he showed me a quantity of foul material which he had passed consisting of a gangrenous appendix floating in pus. It seems that the appendix had sloughed, the abscess had burst into the rectum, and the whole had been evacuated. To my chagrin he had a rapid and uneventful recovery, and, almost to the day of his death from another condition several years later, never failed to twit me for denying him a bottle of medicine "to pass it on."

The second case was even more humiliating. A pyrexial child developed signs of an apical pneumonia. There was some abdominal pain and rigidity, but remembering how, as a house surgeon, one had scoffed at G.P.'s who sent in pneumonias with pain referred to the abdomen as acute appendices, one was not going to be caught like that. This was an apical pneumonia and nothing else. It was therefore disconcerting when, on about the tenth or eleventh day of the disease, green pus began to spurt from the umbilicus. There was a concomitant pneumococcal peritonitis which, tired of awaiting diagnosis, had decided to discharge itself. Both the chest and the abdominal condition cleared up and the child recovered completely without any operative treatment. The patient and her parents remain full of gratitude to me.

* * *

Are there any limits to human eccentricity? I have just heard of an elderly artist who is also a keen fisherman. One day whilst angling he became suddenly moved to tattoo the sign of the cross on his abdomen. For the carrying out of this strange purpose the only implements he found at hand were two somewhat rusty fish-hooks both of which he broke before the work was finished. He therefore completed the design with thorns. Not unnaturally perhaps, the wound suppurated and proved extremely resistant to treatment till, finally, cultures of the infected material were made which yielded, to the astonishment of all concerned, a pure growth of the Klebs-Löffler bacillus. The patient was accordingly given some injections of diphtheria antitoxin which cleared up the condition completely and he is now left with a neat white cruciform scar involving the entire surface of his abdomen. He is reported to be in good health and quite happy. In fact he sounds as nice an old masochist as one could wish to avoid meeting.

* * *

I have just been re-reading that dogmatic and entertaining little book "The A.B.C. of General Practice," by the late Dr. A. Campbell Stark, who must surely have been the sealed pattern of the general practitioner. Talking of midwifery he says, among other good things: "It is remarkable, and a pregnant (sic) commentary on the history of medicine, that, after some thousands of years of recorded civilisation, the best way to conduct a normal confinement should be a matter for virulent controversy." He proceeds vigorously to denounce the teachers of midwifery and their methods, and to advocate routine delivery with Wagstaffe's forceps, all in a manner calculated to provoke thought and argument. Musing on this vexed question of obstetrics and the recent cry for improved midwifery service, and the better teaching of midwifery, it occurs to me that successful obstetrics is at least as much a matter of temperament as of training and, in this connexion, I am reminded of an old practitioner of my acquaintance, still very much alive though retired, who was perhaps the most successful obstetrician I have ever met. He practised in the days before antenatal examinations, and had had the barest minimum of training, having qualified at a time when the curriculum occupied four years or less. Being very short of money on qualification he took no post-graduate appointment of any kind, but went straight into a country practice where he worked for some forty years. Not liberally educated and lacking that background of general culture now regarded as desirable in the making of a doctor, my friend was unable to teach by word of mouth. Indeed he had great difficulty with our technical jargon—all his life he referred to "primips" as "*prinips*"—but his practical obstetrics were a joy and a lesson to watch. He belonged to the era when Listerian principles were only just being accepted, and he was never really convinced of the importance of asepsis. It is true that he used to boil his forceps but, before handling them, he would wash his hands, dry them carefully on a clean but not sterile towel, and then put on his far from sterile spectacles. The forceps were applied with infinite gentleness, upper or lower blade first as seemed best to him, and the fœtal head was then eased or coaxed out. Traction was never applied vigorously—such traction as was applied coincided with the uterine contractions, and one blade was always removed before "crowning" occurred, the other being used in a manner reminiscent of a long-handled spoon or fork scooping an olive from a narrow-necked bottle, so that perineal tears were few and small though always carefully repaired. There was never any feeling of tension or hurry from

start to finish of this commonplace but important little operation, and I have seen him deliver of a living child a woman with a grossly contracted pelvis who had already had three stillborn children in other hands. But I would not have him condemned as a meddlesome midwife, for his skill did not rest merely on his deftness with the forceps. Indeed, he was reluctant to use them, and could be patience itself transmitting his serenity and quiet confidence to the most "defeatist" of parturient females. If only the practice of midwifery could be restricted to persons of this type, there might be less alarm and despondency among the laity about this business of child-bearing which is still quite often a physiological process and not a thing to be dreaded as a mortal disease.

Another story illustrates the natural competence of my friend. One busy day, on his return from a visit to a distant farmhouse, he showed me several grape-like bodies wrapped in a piece of lint and asked me what they were. I plumped for hydatidiform mole, a condition with which he was totally unfamiliar, and he asked how it should be treated. I explained that the uterus must be emptied, hinting darkly at the possibility of subsequent chorion-epithelioma if the job were not done thoroughly. His only reply was to suggest that I should give an anæsthetic while he did so. When we arrived we found the patient acutely ill with high fever. Using such primitive instruments as he had and his bare neat fingers, he dilated and curetted that uterus very carefully. "She ought to be all right now," he said as he finished—and she was. She never turned a hair, and a year later gave birth to a healthy child. This, I submit, was not the courage of ignorance but the courage of a simple mind which had not been inhibited by too much teaching.

* * *

Our rural system of diphtheria control is not yet perfect. A single case occurred in an outlying village recently. The patient, a boy, was given antitoxin immediately and removed to the isolation hospital. The remaining members of the household were all swabbed and found to be negative. The patient was at length discharged from hospital, presumably after the usual routine of three negative swabs, and returned home. Within a week of his return, his brother took the disease very severely and died soon after admission to hospital. The household were again swabbed and were all again negative, except the boy who had just come back, who was found to be a carrier.

CORRESPONDENCE

HISTIDINE FOR PEPTIC ULCER

To the Editor of THE LANCET

SIR,—I was interested to see that Dr. R. H. Gardiner, in your issue of June 13th, dealing with the histidine treatment of gastric and duodenal ulcers, had found that there is a "typical fall of gastric acidity" after treatment with histidine. He also states, later on in his article, "it is doubtful if histidine has any healing effect on the ulcer directly, its action probably being a reduction in gastric acidity and a lowering of gastric mobility."

Like Dr. Gardiner I treated, in 1935, a consecutive dozen cases with Larostidine injections only, and found in those in which a test-meal was carried out before and after treatment that the acidity was quite unchanged after treatment, although in some cases symptoms were alleviated as he found. All these cases had radiological evidence of ulceration. It was his statement about the typical fall in gastric acidity which prompted me to write, with a view to hearing the findings of others. I note that "small doses of alkalis were prescribed at the beginning of the course when there was pain after meals." In my cases no alkalis were used.

With the conclusions reached in your annotation on p. 1365 of the same issue I am in entire agreement. I have ceased using histidine as a routine measure in peptic ulcers owing to doubt as to its efficacy.

I am, Sir, yours faithfully,

A. P. MENZIES PAGE.

City General Hospital, Leicester, June 28th.

THE ORTHOPÆDIC OUTLOOK

To the Editor of THE LANCET

SIR,—For long physiology was the preserve of the pure physiologist, whose thoughts and language were unintelligible to the average clinician. It was often several years therefore before any valuable physiological advance found its clinical application. Of recent years, this gap has been considerably lessened by lectureships in applied physiology, surgical physiology, &c. The late Sir Percy Sargent once remarked that "among other things the war had given us was that peculiar excrescence of surgery called orthopædics." Orthopædics having split off from surgery in many centres, orthopædists are gradually assuming that insularity of outlook formerly so characteristic of the physiologists. They have adopted a language of their own. The diseases, injuries, and operations of orthopædic surgery form a catalogue of surnames, only known and (?) honoured in orthopædic circles. As with members of all new creeds and parties, the orthopædist is jealous and suspicious of anyone who is not of "pure Aryan stock"—i.e., one who confines his practice solely to orthopædics.

In your columns of June 20th I read with interest and some amusement the criticism of the second edition of Mercer's "Orthopædic Surgery." This most valuable book is written by a general surgeon who has taken a special interest in orthopædics. It is the first serious attempt to bridge that slowly widening gap between surgery and orthopædics. It is written *not* for the orthopædist, but for the general surgeon, the young surgeon, and one studying for the higher surgical degrees. Your critic is obviously a "pure" orthopædist, who rather resents the appearance of a second edition of a successful book on orthopædic surgery, written by one who openly confesses in the preface that he is "non-Aryan" in the orthopædic sense. While it is surely the privilege and prerogative of any critic to "damn with faint praise," as your critic has done—to allow his prejudice and bigotry to be unmasked by his descent to cheap cynicism, as he does at the beginning of the third paragraph of his criticism—viz., "In spite of these defects this book is undoubtedly a useful one for the third-year student"—renders his criticism, as such, worthless.

As a general surgeon located about 200 miles away from the nearest "pure orthopædist," I have, of necessity, often to seek orthopædic aid in various text-books. I also am dependent to a certain extent

on journal criticisms for keeping my surgical library up to date. I therefore deprecate this departure from the usual impartial and helpful standard of the criticisms that appear from time to time in your journal.—I am, Sir, yours faithfully,

Inverness, June 26th. A. J. C. HAMILTON.

CHICKEN-POX AND SHINGLES

To the Editor of THE LANCET

SIR,—I have a small contribution to make which may be of interest. A baby aged 24 days was brought to the infant welfare clinic at the Middlesex Hospital, having been born on the hospital district. It was a first and only child, breast fed and not in contact with anybody except its parents and the nurse until it was taken out to come to the clinic. It there presented an eruption which, although sparse, seemed characteristic of chicken-pox. My colleague, Dr. Henry MacCormac, who saw the child with me, agreed that the individual lesions were typical of varicella. They had been present for about three days. Chicken-pox at three weeks of age is in itself unusual and the mother volunteered the information that the father was suffering from shingles at the time of the baby's birth.

I am, Sir, yours faithfully,

London, W., June 27th. ALAN MONCRIEFF.

To the Editor of THE LANCET

SIR,—For some considerable time I have been considering asking you for the courtesy of your columns to investigate the problems of the association of herpes zoster and chicken-pox. Dr. Kyle's letter in your last issue shows clearly the need for some authoritative statement on this subject, and I believe the only way of obtaining this at present is by a clinical study of a large number of cases such as is unlikely to be the lot of one individual.

My own experience may be of interest. In five years, among a population of 600 boys from 13 to 18 years of age, there have been nine cases of herpes zoster of which only one has given rise to an epidemic of chicken-pox. This was a boy of 16 who had had chicken-pox. On Oct. 5th, 1932, he had numerous patches of vesicles along the course of the third and fourth thoracic nerves on the right side and pain on moving his shoulder. These vesicles were 5 mm. in diameter, and not clumped together. From Oct. 7th to 9th he had a temperature between 99°–100° F. During this time he had a large boil in the left flank and one in the right axilla. He later had more boils without pyrexia, and my belief is that the herpes and not the boils caused his temperature. Four boys who slept in the same dormitory contracted chicken-pox: one on Oct. 18th, one on the 19th, and two on the 20th. The incubation period was therefore 13–15 days. Further cases arose from these four, and the incubation period was slightly longer. One of the remaining seven had coincident chicken-pox and herpes in the middle of an epidemic. He had had a previous attack of chicken-pox. It is impossible to say whether he gave rise to further cases.

All the remaining seven had had chicken-pox. In none was there a history of contact with chicken-pox or herpes, nor did they give rise to any further cases, despite the fact that they were not kept out of school, and mixed freely with many known not to have had chicken-pox. All were apyrexial. The vesicles were usually in groups of approximately 20 spread over an area 2 cm. by 1 cm., and each vesicle was approximately 1 mm. in diameter. They scabbed without becoming pustular. Pain of any severity was absent, but this is a well-known feature of herpes in this age-group. Branches of the thoracic nerves were affected in four: the trigeminal (first division) in two, and the cervical in one.

I have studied the literature fairly fully and am struck by the absence of clinical details. I would be very grateful if any readers would send me details of cases they see, mentioning particularly the physical characteristics of the vesicles during the various stages: the age, the presence of pain, the temperature, whether the attacked has had chicken-pox, the number of people in ultimate contact who have not had a previous attack of chicken-pox or herpes, and the number of them attacked. If the case should be the origin of an epidemic, another interesting fact would be whether the incubation period of cases arising from exposure to herpes is the same as it is for those developing chicken-pox in the same epidemic.

Cases of herpes such as arise from arsenical poisoning or are secondary to metastatic deposits are undesirable, because although some think they are due to an activation of a virus there is no proof of this at present. It is also obviously desirable not to report only cases giving rise to chicken-pox. I hope it is not presumptuous to think that an analysis of the records along these lines of some 50 to 100 cases would provide an authoritative view. When this is available I shall ask you to publish the results.

I am, Sir, yours faithfully,

Rugby School Sanatorium, June 29th. R. E. SMITH.

A NEW DYSTROPHY OF THE FIFTH FINGER

To the Editor of THE LANCET

SIR,—In THE LANCET of June 20th (p. 1412) Dr. Robinson Thomas has brought to the notice of your readers an abnormality which is not rare but is little recorded in literature. He classifies the condition as a "dystrophy," but subsequently states that "it seems probable that this lesion is due to an osteochondritis." It is not stated whether he supposes the osteochondritis has affected the epiphysis of the terminal phalanx (such a condition having been reported in other phalangeal epiphyses), but he gives the impression that the changes he describes in the shaft result from osteochondritis of the shaft of the phalanx. The latter is not comparable to osteochondritis elsewhere in the skeleton. There is every reason to suppose that the condition is a congenital abnormality, and it is, I think, important that a new term such as "osteochrondritis" should be limited to such lesions as are clearly in one category. This condition of the fingers is usually bilateral, may be associated with other abnormality of the phalanges, and may occur in other members of the same family. A comparable condition may occur in the toes.

This year I have seen a boy, aged 5, whose little fingers deviated radially at the end of the finger, exactly as in Dr. Thomas's skiagrams. The skiagrams showed an increase in the density of the epiphysis of the terminal phalanx and a curve in the shaft. There was a notch in the distal part of the middle phalanx showing an attempt at a distal epiphysis to this phalanx which had a normal proximal epiphysis. There was a slight webbing of the second and third toes. Mr. H. A. T. Fairbank, in a personal communication, informs me he has, amongst others, records of (1) a girl, aged 11, who had both little fingers affected and in one hand a slight similar deformity, of the first finger. This child had an epiphysis at either end of the middle phalanx;

(2) two sisters who had the deformity each in one hand only, and the father had a slight degree of it.

A similar condition may occur in the big toe when there is a hallux valgus, at or near the interphalangeal joint, owing to deformity at the base of the terminal phalanx. The second toe may be similarly affected. It appears therefore that this is one type of congenital abnormality which occurs at the distal end of the digit. The big toe is probably affected more often than any other and the little finger next in frequency. The deformity seems to be in the direction of the midline of the limb. In none of these cases does there appear to be a history of injury, pain, or signs of inflammation; most are symmetrically bilateral.

I am, Sir, yours faithfully,

Queen Anne-street, W., June 26th. ST. J. D. BUXTON.

H. P. NELSON MEMORIAL FUND

To the Editor of THE LANCET

SIR,—Surgery has been left the poorer by the death of H. P. Nelson at a time when his high qualities and his hard work were about to receive their reward. In view of the widespread expressions of sympathy which have been received both from his colleagues in the profession and from the public, his friends feel that there are many who would wish to give this feeling practical form. The early career of a surgeon necessitates expenditure which leaves at first very little on the credit side. No expression of the general appreciation of his bravery and skill would be more valuable than the provision of means for his widow and for the education which he would have desired for his two children.

Contributions should be made payable to the "H. P. Nelson Memorial Fund," and sent to the address below.

We are, Sir, yours faithfully,

(Signed) HORDER, J. E. H. ROBERTS,
ARTHUR ELLIS, W. GIRLING BALL,
VICTOR W. DIX, FRANCIS C. ROLES } *Secretaries.*

The Dean's Office, St. Bartholomew's Hospital, E.C.1, June 30th.

PARLIAMENTARY INTELLIGENCE

ECONOMICS OF MALARIA

IN the House of Commons on Wednesday, June 24th, Mr. MATHERS asked the Secretary of State for the Colonies if he was aware that the Pan African Health Conference Committee on Malaria reported that the results of research could not be applied successfully, and on an adequate scale, unless the economic status of the bulk of the population of Africa was raised; whether the removal of native poverty was constantly kept before his officers in the colonies and dependencies; and whether he could report any recent progress in this regard. In reply Mr. ORMSBY-GORE said that the hon. Member would be in error in thinking that the conference were of the opinion that malaria was due to malnutrition or other causes connected with poverty. Malaria was an organism or parasite of which the hosts or vectors were particular species of mosquitoes and whether or not a person caught malaria depended not upon his personal wealth but on whether he was or was not bitten by a mosquito infected with the malaria parasite. The important thing to realise was the necessity for destroying the mosquitoes.

Mr. MATHERS: May I ask the right hon. gentleman whether he denies the statement made in the report to which I have referred that the question of tackling the incidence of malaria cannot be properly dealt with unless the economic position of the people generally is raised? Does the right hon. gentleman deny the statement, and will he be good enough to answer the last part of the question as to what is being done by the Government to take action in this direction?—Mr. ORMSBY-GORE: It is perfectly true that, unless the purchasing power of the community can be raised it is impossible to raise taxation for the public works necessary to clear up the swamps and the like which breed the mosquitoes; and the problem of increasing the purchasing power of the native inhabitants of the tropics depends entirely on the world price of what they produce for sale.

Mr. T. WILLIAMS: Is it not the case that the absolute poverty and malnutrition of the work-people of Ceylon were responsible for a terrific death-rate as a result of a malaria epidemic in 1934–35, a considerable proportion of which would have been avoided had the people been fed as they might be fed?—Mr. ORMSBY-GORE: That is another question. The primary need of Ceylon is an effective campaign against the malaria-bearing mosquito. Apart from that, I entirely agree that the nutrition of a large number of people in Ceylon is unsatisfactory, because they prefer imported husked rice; and great steps have been taken in the last two or three years to increase the acreage under locally grown rice, which is far more nutritious.

NOTES ON CURRENT TOPICS

In the House of Lords on June 24th the Old Age Pensions Bill, the National Health Insurance Bill, and the Widows, Orphans, and Old Age Contributory Pensions Bill passed through Committee with certain amendments recommended by the Joint Committee on Consolidation Bills and were reported to the House. These measures passed the Report stage on the following day.

On the same day the Employment of Women and Young Persons Bill was read a second time.

Public Health Bill

In the House of Lords on June 25th the Public Health Bill was considered in Committee.

The Earl of ONSLOW said he was chairman of the Joint Select Committee which examined the Bill, which consolidates the whole public health law of the country. The Committee made an amendment by adding measles to the list of notifiable diseases. That was not going much wider than was necessary to amend the law to make it easily comprehensible, although he was told that there were difficulties in connexion with the notification of measles. No doubt they would be told about that by the department on the Report stage.

The amendments proposed by the Joint Committee were agreed to and the Bill passed through Committee.

QUESTION TIME

WEDNESDAY, JUNE 24TH

Diseases of Animals Order, 1931

Mr. MESSER asked the Minister of Agriculture how many prosecutions had taken place for breaches of the Diseases of Animals Order, 1931, No. 750; how many prosecutions were undertaken by officials of the Ministry of Agriculture; and how many at the instance of animals societies.—Mr. RAMSBOTHAM replied: The Order referred to is required to be administered by local authorities. No prosecutions for offences against the Order have been undertaken by officials of the Ministry, but notification has been received of 567 cases in which prosecutions have been conducted by the local authorities since the Order was made. This number does not necessarily include all prosecutions undertaken. The department has no record of any prosecutions having been carried out at the instance of animals societies.

Mr. MESSER: In view of the fact that it appears that this Order is so little known to clerks to justices, will the

hon. Member see that this information is circulated to them?—Mr. RAMSBOTHAM: If there are any steps that I can take I will consider them.

Retail Price of Milk

Mr. PETHERICK asked the Minister of Agriculture the average cost of milk retail, for liquid consumption, in the month of June in the years 1929, 1933, 1935, and 1936.—Mr. RAMSBOTHAM, Parliamentary Secretary to the Ministry of Agriculture, replied: Particulars obtained by the Ministry of Labour for the purpose of calculating changes in the cost of living show that average retail prices of milk in the United Kingdom on June 1st were in 1929 5½*d.* per quart; in 1933 5¼*d.* per quart; in 1935 and in 1936 6*d.* per quart.

Supply of Milk to School-children

Mr. PETHERICK asked the Minister of Agriculture the number of children now receiving milk in the schools as the result of the Government scheme.—Mr. RAMSBOTHAM replied: The number of children in grant-earning schools in England and Wales receiving milk free or for payment under the Milk-in-Schools Scheme is provisionally estimated to have been 2,561,500 on March 31st last. I am informed by my right hon. friend, the Secretary of State for Scotland, that the latest corresponding figure for Scotland which relates to the month of May is 315,000. In addition, 191,500 children are estimated to have been receiving milk in England and Wales under arrangements outside the scheme, making a total of 3,068,000.

THURSDAY, JUNE 25TH

Health Conditions at London Employment Exchange

Mr. CREECH JONES asked the Minister of Labour whether he was aware that the premises of the Edgware-road employment exchange were, owing to their lack of ventilation and unhygienic conditions, unsuited for the work of his department; that they were having a detrimental effect upon the health of his staff, as witnessed by the high percentage of sick leave; and whether he was taking any step to remedy this state of affairs pending the erection of the new premises.—Lieut.-Colonel MUIRHEAD, Parliamentary Secretary to the Ministry of Labour, replied: This exchange will be re-housed as soon as possible. The existing premises were erected in 1924 and are admittedly not satisfactory under present conditions, but I do not think the somewhat higher percentage of sick leave can properly be attributed to the state of the premises.

Extension of Nursery Schools

Mr. LEACH asked the President of the Board of Education if he was taking any steps to promote the increase of nursery schools and if he could explain the slow rate at which such schools were expanding.—Mr. OLIVER STANLEY replied: I am sending the hon. Member a copy of the Board's Circular 1444 issued last January, in which local education authorities are asked to survey the needs of their areas. I think that it is too early yet to come to any conclusion regarding the rate at which nursery schools are increasing.

Mr. LEACH: Does the right hon. gentleman not think it necessary to accelerate the efforts now being made by his department in regard to new nursery schools, and particularly in view of the fact that the Government have refused a really genuine increase of the school-leaving age? Would it not be better for them to attend to the problem of getting the children to school a bit earlier?—Mr. STANLEY: The progress is not unsatisfactory. Since the issue of the Circular I have had 28 proposals for new schools and six proposals for enlargement of existing ones, a much greater development than has ever been experienced before.

Tuberculosis Mortality-rate Among Women in Durham and Northumberland

Mr. LESLIE asked the Minister of Health if he was aware of the increased death-rate from tuberculosis of women in Durham and Northumberland; and whether he would institute an inquiry into the cause or causes of this increase from 124 to 152 per 100,000.—Sir KINGSLEY WOOD replied: I am unable to identify the death-rates quoted by the hon. Member. The death-rates of females from all forms of tuberculosis per 100,000 of the female population in Durham and Northumberland was 90·5 in 1934 and 82·8 in 1935, and the decline has been continuous during the past five years.

Children's Home, Leominster

Mr. LOVAT-FRASER asked the Minister of Health if he had inquired into the alleged cruelty to children in the children's home at Leominster, to which his attention had been called recently; and, if so, what he proposed to do.—Sir KINGSLEY WOOD replied: I have been in touch with the Herefordshire County Council through the General Inspector for the district and I do not think that any action on my part is necessary in supplementation of the action already taken by the Council, who have accepted the resignation of the Matron of the Home on grounds of ill-health and are arranging for the transfer of the children to a voluntary home, certified by me under the Poor Law Act.

The Medicine Stamp Duty

Sir ARNOLD WILSON asked the Chancellor of the Exchequer whether, in view of the difficulties involved in the administration of the Medicine Stamp Duty Acts, he would undertake a reconstruction of this tax and a revision of the conditions attached to it.—Mr. CHAMBERLAIN replied: The medicine stamp duty is governed by a series of statutes considerably more than a century old. These Acts are in many respects out of date and unsuited to present-day conditions, and they produce a number of anomalies which makes the administration of the duty extremely difficult. I have come to the conclusion that the tax needs reconstruction, but a number of conflicting interests are concerned, and in all the circumstances I think the most appropriate course would be for the matter to be considered by a Select Committee of this House. I propose, therefore, to move for the appointment of a Select Committee to examine the law as it at present stands and to recommend what changes appear to be desirable.

Sir A. M. SAMUEL: Is my right hon. friend aware that for some time past what is now called legal evasion has been effectively used against the provisions of the Patent Medicine Stamp Duties?—No further answer was given.

Guy's Hospital and Small-pox Cases

Mr. GROVES asked the Minister of Health whether any cases of small-pox and, if so, how many, had been found in the surgery or out-patients' department of Guy's Hospital during the last two years; and whether any were discovered during the three preceding years.—Sir KINGSLEY WOOD replied: I am informed that the numbers of cases have been as follow: 1931, 2; 1932, 22; 1933, 5; 1934, 2; 1935, 0. These were all cases of variola minor.

MONDAY, JUNE 29TH

Workers and Asbestos Dust

Mr. THORNE asked the Home Secretary if he was aware that a number of deaths had occurred of employees of the Cape Asbestos Works, Barking, through inhaling asbestos dust, and that in an inquest held at Walthamstow, on June 15th, on Charles E. Salinger, aged 36, of 59, Rancliffe-road, East Ham, it was proved that he left the firm six years ago; and whether, as the present regulations did not cover workers employed in the warehouses, &c., the Government had any intention in altering the present regulations to cover all workers employed in this dangerous trade.—Mr. GEOFFREY LLOYD, Under-Secretary, Home Office, replied: It appears from the evidence at the inquest that out of the nine years during which the deceased was employed at these works he was employed for at least the last seven years in a department to which the regulations now in force apply. I am advised that there is no reason to suppose that his previous employment as a packer was in any way responsible for his contracting the disease, and that no case exists at present for any extension of the regulations.

Voluntary Hospitals and Flag Day Regulations

Mr. SUTCLIFFE asked the Home Secretary whether he could make a statement about the investigation which was now proceeding as regards the number of flag days held each year; and whether he would give an assurance that the voluntary hospitals would not be prejudicially affected by any new regulations which might be issued.—Mr. GEOFFREY LLOYD replied: I presume my hon. friend is referring to a development foreshadowed in the Report for 1935 of the Advisory Committee, which advises the Commissioner of Police of the Metropolis as regards the grant of permission for flag days in the metropolitan police district. Discussions have been taking place between the committee and various charitable interests, with a view to securing a reduction in the number of flag days by arrangements for kindred charities to make combined appeals to the public. No change in the regulations is contemplated and the new arrangements have still to be completed, but the Commissioner sees no reason to fear that the hospitals will suffer from them.

TUESDAY, JUNE 30TH

New Unemployment Relief Regulations

Mr. LAWSON asked the Minister of Labour if he was now in a position to state when the new regulations of the Unemployment Assistance Board will be ready.—Mr. ERNEST BROWN replied: I anticipate that I shall be in a position to lay a draft of these Regulations on July 14th, with a view to their publication that evening.

Replying to questions from Members in various parts of the House Sir J. SIMON, Home Secretary, speaking for the Prime Minister, said that the Regulations would be accompanied by an explanatory White Paper, and the Government would certainly give adequate time for their consideration before Parliament rose for the summer recess.

Grass Fever among Horses in Scotland

Sir EDMUND FINDLAY asked the Secretary of State for Scotland whether his attention had been drawn to the renewed outbreak this year of grass fever among horses in the north-east of Scotland; and whether his department would cause an investigation to be made into the incidence of this disease with a view to its prevention or cure.—Sir GODFREY COLLINS replied: The reply to the first part of the question is in the affirmative. This disease has been for several years and still is the subject of intensive research by the Animal Diseases Research Association in collaboration with other scientific authorities and veterinary practitioners, but up to the present they have not been able to elucidate the cause of the disease nor to discover means for its prevention or cure.

PUBLIC HEALTH

Able-bodied, Infirm, or Aged

ONE and a half years ago the L.C.C. decided to classify and reallocate the inmates of public assistance and public health institutions within their jurisdiction, and a survey to enable this to be done was presented to the meeting on Tuesday last. There are now 13 general institutions under the L.C.C. public assistance committee, almost all accommodating many different classes. It is true that Westminster and Camberwell institutions now only receive men, and that all the chronic sick have been removed from Chelsea, St. Marylebone, and South Grove, but the other institutions still house the infirm, the aged, and the able-bodied of both sexes. In February, 1935, there were 9983 public assistance cases (other than infants) in institutions and homes, while 3032 were still in establishments under the hospitals and medical services committee. The new classification is *by* institutions instead of *in* institutions. The survey lays down minimum standards of floor space, according to which the major portion of the existing accommodation is seriously overcrowded. The suggested alterations will result in a net loss of 264 beds and the programme for the immediate future includes a new home for the aged in south-east London, a hostel for able-bodied women, and a new nursery home at Ladywell. The number of women is small but the present accommodation is gloomy and depressing, and the suggestion is to provide a small hostel having a bright and homely atmosphere where a carefully planned syllabus could provide for light outdoor occupations, as well as general domestic duties, and for leisure time spent in healthy surroundings.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 20TH, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1786; diphtheria, 826; enteric fever, 29; pneumonia (primary or influenzal), 703; puerperal fever, 39; puerperal pyrexia, 129; cerebro-spinal fever, 14; acute poliomyelitis, 8; acute polio-encephalitis, 1; encephalitis lethargica, 7; dysentery, 24; ophthalmia neonatorum, 90. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 26th was 4260, which included: Scarlet fever, 1025; diphtheria, 730; measles, 1263; whooping-cough, 519; puerperal fever, 15 mothers (plus 10 babies); encephalitis lethargica, 284; poliomyelitis, 1. At St. Margaret's Hospital there were 21 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox, 3 (1) from enteric, 22 (10) from measles, 3 (0) from scarlet fever, 25 (5) from whooping-cough, 15 (2) from diphtheria, 43 (12) from diarrhœa and enteritis under two years, and 28 (3) from influenza. The figures in parentheses are those for London itself.

Hull reported 3 deaths from measles, no other great town more than 1. Fatal cases of whooping-cough were scattered over 18 great towns; Birmingham, Nottingham, and Norwich each reported two. Deaths from diphtheria were reported from 12 great towns, 3 from Sheffield. Liverpool had 4 deaths from diarrhœa, Bradford and Manchester each 3. Stockport and Sunderland each had 1 death from enteric fever.

The number of stillbirths notified during the week was 277 (corresponding to a rate of 38 per 1000 total births), including 43 in London.

THE King has appointed Dr. H. D. Weatherhead, senior medical officer of Saint Lucia, Leeward Islands, an official member of the executive council of the island.

MARIE CURIE HOSPITAL.—On June 30th the Archbishop of Canterbury presided at a meeting at Lambeth Palace in support of the Marie Curie Hospital, and paid a tribute to the work of "that patient, humble, and brilliant woman, Marie Curie." Sir James Jeans, F.R.S., said that a small hospital could do little to cope with the enormous number of cases of cancer in the country, but if each case treated there was thoroughly investigated, and thus added to the scientific material available for accumulating knowledge, much could be achieved. The kind of information now being collected at the Marie Curie Hospital was essential for their further progress. Mrs. Walter Runciman chairman of the board of management, said that the hospital, though it only had 39 beds could treat over 600 cases in a year. They were building a new pathological laboratory to increase the facilities for research. She thanked Sir James Jeans for an X ray apparatus which he had recently given to the hospital.

Vacancies

For further information refer to the advertisement columns

Battersea General Hospital, Battersea Park, S.W.—Hon. Gynæcologist, Ophth. Surgeon, and Ear, Nose, and Throat Surgeon. Also H.S. and H.P., £130 and £120 respectively.
Bedford County Hospital.—First H.S., at rate of £155.
Birkenhead Municipal Hospital.—Deputy Med. Supt., £450.
Birmingham and Midland Eye Hospital.—H.S., at rate of £130.
Birmingham Ear and Throat Hospital.—Second and third H.S.'s, each at rate of £150.
Blackburn Royal Infirmary.—Res. H.P., £175.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.P., at rate of £120. Also Hon. Surg. and Hon. Surg. to Ear, Nose, and Throat Dept.
Bolton Royal Infirmary.—H.S., £125.
Bradford New Royal Infirmary.—Two H.S.'s, each £135.
Brighton Borough Infectious Disease Hospital and Sanatorium.—Sen. Res. M.O., £450.
Brighton, New Sussex Hospital for Women, Windlesham-road. H.S., £100.
Brighton, Sussex Eye Hospital, Eastern-road.—H.S., at rate of £150.
Bristol Royal Infirmary.—Res. Med. appts., at rate of £150, £100, and £80.
Cambridge, Addenbrooke's Hospital.—H.S., at rate of £130.
Canterbury, Kent and Canterbury Hospital.—H.S., at rate of £125.
Chesterfield and North Derbyshire Royal Hospital.—H.S. to Ophth. and Ear, Nose, and Throat Dept., at rate of £150.
Chichester, Royal West Sussex Hospital.—Sen. and Jun. H.S.'s, £175 and £125 respectively.
Colchester, Essex County Hospital.—H.P., £150.
Connaught Hospital, Walthamstow, E.—H.P., H.S., and Cas. O., each at rate of £100.
Doncaster Royal Infirmary and Dispensary.—H.S. to Eye and Ear, Nose, and Throat Dept., £175.
Dorchester, Dorset County Hospital.—H.S., at rate of £150.
Edgware, Redhill County Hospital.—Jun. Asst. M.O., at rate of £250.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S., at rate of £120.
Gloucestershire Royal Infirmary.—H.S., at rate of £150.
Great Yarmouth General Hospital.—H.S., at rate of £140.
Grimsby and District Hospital.—Sen. and Jun. H.S.'s, £200 and £150 respectively. Also H.P., £150.
Halifax Royal Infirmary.—Third H.S., at rate of £150.
Harrogate Royal Bath Hospital.—Res. M.O., £156.
Harrow on the Hill, Harrow and Wealdstone Hospital.—Hon. Dermatologist.
Hastings, Royal East Sussex Hospital.—Jun. H.S., at rate of £150.
Heston and Isleworth Borough.—Sen. Asst. M.O.H. and School M.O., £600.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. Surgeon.
Hospital for Tropical Diseases, Gordon-street, W.C.—Res. Med. Supt., £400.
Hull Municipal Maternity Home and Infants' Hospital.—Jun. Res. M.O., at rate of £100.
Ilford, King George Hospital.—Hon. Dermatologist.
Indian Medical Service.—Commissions.
Italian Hospital, Queen-square, W.C.—Hon. Surgeon.
Kettering and District General Hospital.—Second Res. M.O., at rate of £125.
Kidderminster and District General Hospital.—Sen. and Jun. H.S.'s, £150 and £100 respectively.
Leeds University.—Part-time Lecturer in Physiology and Hygiene, at rate of £400.
Leicestershire and Rutland Mental Hospital, Narborough.—Asst. M.O., £350.
Lincoln City.—Deputy M.O.H., £600. Also Asst. School M.O., £500.
Lincoln, The Lawn.—Asst. M.O., £300.
Liverpool and District Hospital for Diseases of the Heart.—H.P., £100.
Liverpool Royal Children's Hospital, Myrtle-street.—Registrar and Tutor, £150.
Maidstone, Kent, County Ophthalmic and Aural Hospital.—H.S., at rate of £200.
Manchester, Ancoats Hospital.—H.S., at rate of £100.
Manchester, Crumpsall Hospital and Institution.—Jun. Asst. M.O., at rate of £200.
Manchester, Northern Hospital.—Res. Surg. O., £150. Also Res. H.P. and H.S., each at rate of £100.
Manchester Royal Children's Hospital, Pendlebury.—Res. M.O. and Res. H.S., at rate of £125 and £100 respectively. Asst. Surgeon and Asst. Surgeon to Ear, Nose, and Throat Dept., each £50. Also Asst. Physician, £40.
Manchester Royal Infirmary.—Cardiographic Registrar, Senior H.S., each £150. Res. Cas. O., at rate of £150. Also two H.S.'s to Special Depts., each at rate of £50.
Manchester, St. Mary's Hospitals.—Res. Obstet. O., £175.
Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—Radiologist, 100 guineas.
North Middlesex County Hospital, Edmonton.—Asst. M.O., at rate of £350.
Nottingham Hospital for Women.—H.S., at rate of £150.
Oldham, Boundary Park Municipal Hospital.—Res. Asst. M.O., at rate of £200.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—Two H.S.'s, each at rate of £200.
Plymouth, Prince of Wales's Hospital.—Res. Anæsthetist and H.S., at rate of £120.
Poplar Hospital for Accidents, East India Dock-road, E.—Hon. Gynæcologist.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S., at rate of £120–£150.
Queen Mary's Hospital for the East End, Stratford, E.—Anæsthetist, £50.
Rochdale Infirmary and Dispensary.—H.P., £150.
Rochester, St. Bartholomew's Hospital.—H.P., at rate of £175.
Royal Air Force Medical Service.—Commissions.
Royal Cancer Hospital, Fulham-road, S.W.—H.S. to Radium Dept., at rate of £100.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Hon. Asst. Surgeon. Also two H.S.'s for country branch, each at rate of £150.
Seamen's Hospital Society, Greenwich.—Res. M.O., at rate of £110.
Sheffield, Jessop Hospital for Women.—H.S., at rate of £100.
Southampton, Royal South Hants and Southampton Hospital.—H.S. to Ear, Nose, and Throat Dept. and Res. Anæsthetist, at rate of £150.
South Eastern Hospital for Children, Sydenham, S.E.—Res. M.O., at rate of £100.
South London Hospital for Women, Clapham Common, S.W.—H.S., at rate of £100. Also Clin. Asst. for Gynæcological Out-patients.
South Shields Ingham Infirmary.—Sen. and Jun. H.S., £200 and £150 respectively.
Staffordshire General Infirmary.—H.P. and Cas. O., at rate of £150.
Stockport Infirmary.—H.S., £150.
Stoke-on-Trent Longton Hospital.—H.S., £160.
Sudan Medical Service.—Stack Medical Research Laboratories, Bacteriologist, £E.720.
Surrey County Council.—Deputy County M.O.H., £1150. Two Asst. M.O.'s, each £600. Also First Asst. Res. Asst. M.O. for Surrey County Sanatorium, £600.
West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Hon. Med. Psychologist. Also Res. H.P., £125.
West London Hospital, Hammersmith-road, W.—Hon. Asst. Anæsthetist.
Westminster Hospital, Broad Sanctuary, S.W.—Clin. Asst. to Varicose Veins Clinic.
Wigan, Royal Albert Edward Infirmary and Dispensary.—H.S., at rate of £150.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Dental Surgeon. Also Part-time Pathologist, at rate of £300.
Windsor, King Edward VII. Hospital.—Two H.S.'s, each £100.
Wolverhampton Royal Hospital.—H.S., at rate of £100.
Woolwich and District War Memorial Hospital, Shooter's-hill, S.E. H.S., at rate of £100. Also Hon. Asst. Physician.
Worcestershire County Council.—Temp. Asst. County M.O., £12 12s. a week.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bonnybridge (Stirling), Mold (Flint), and Yeovil (Somerset).

Appointments

BAILHACHE, ERIC, M.B. Melb., has been appointed Assistant Resident Medical Officer at the City of London Maternity Hospital.

BARBER, MARY, M.B., Resident Assistant Pathologist at the Royal Free Hospital, London.

CHAMBERLAIN, L. P. B., M.R.C.S. Eng., Pathologist at the Edenbridge District Hospital.

CLEGG, J. L., M.D. Liverp., D.P.H., D.P.M., Junior Assistant Medical Officer at Wadsley Mental Hospital.

COLEMAN, A., M.B. Manch., M.R.C.P. Lond., General Anæsthetist at the Croydon General Hospital.

DEENEY, A. L. P., M.R.C.S. Eng., Bacteriologist at the Queen's Hospital, Birmingham.

DOGGART, J. H., M.D. Camb., F.R.C.S. Eng., Ophthalmic Surgeon to the Hospital for Sick Children, Great Ormond-street.

EDWARDS, L. M., M.D., Resident Medical Officer at the City of London Maternity Hospital.

FLEMING, J. A. C., M.B., F.R.C.S. Edin., D.R., Senior Assistant Radiologist at the Royal Cancer Hospital (Free), London.

GHEY, P. H. R., M.B. Camb., F.R.C.S. Eng., Resident Surgical Officer at Addenbrooke's Hospital, Cambridge.

GLEADELL, M.B. Melb., F.R.C.S. Eng., D.G.O., Resident Medical Officer at the Hospital for Women, Soho-square.

GRAHAM-CAMPBELL, R. W., F.R.C.S. Edin., Assistant Gynæcologist and Obstetrician at the Royal United Hospital, Bath.

HOFFMAN, H. L., M.B. Camb., M.R.C.P. Lond., Assistant Registrar at the National Hospital, Queen-square.

HUTCHINSON, W. R. S., M.B. Camb., F.R.C.S. Eng., Resident Surgical Officer at Huddersfield Royal Infirmary.

JONES, H. V. M., M.B. Lond., D.P.H., Assistant Medical Officer for Monmouthshire.

MORRISON, M. M. M., M.B. Aberd., Radiologist at the Annexe of the Westminster Hospital.

NEWELL, R. L., M.D. Manch., F.R.C.S. Eng., Hon. Assistant Surgeon to the Manchester Royal Infirmary.

NISBET, N. W., F.R.C.S. Edin., Resident Surgical Registrar at Queen's Hospital, Birmingham.

NOWELL, STANLEY, M.B. Manch., D.M.R., Third Assistant Radiologist at the Royal Cancer Hospital (Free).

PETERSON, J. M., D.Sc. Aberd., Lecturer in Experimental Physiology at University College, Cardiff.

RAWLE, R. M., M.B. Sydney, F.R.C.S. Eng., Resident Surgical Officer at Salford Royal Hospital.

SHORE, F. F., M.B. Glasg., Dental Anæsthetist at the Croydon General Hospital.

THORPE, F. T., M.R.C.S. Eng., D.P.M., Senior Assistant Medical Officer at Wadsley Mental Hospital.

WHITTAKER, R., M.B. Manch., Resident Medical Officer at Hull and Sculcoates Dispensary.

(Continued at foot of next page)

MEDICAL NEWS

University of Oxford

In a congregation held on June 25th the degree of Doctor of Medicine was conferred upon H. D. Pavière.

The Welsh prize for excellence in anatomical drawing has been awarded to J. V. S. A. Davies.

At recent examinations the following candidates satisfied the examiners:—

M.CH.

H. J. B. Atkins.

FINAL EXAMINATION FOR B.M., CH.B.

D. R. Balcombe-Brown, D. S. Bateman, P. S. Buckley, D. L. Davies, A. W. Dawson-Grove, A. F. Foster-Carter, D. B. Fraser, W. E. Gibb, W. W. Gilford, David Kendall, R. W. G. Lancashire, P. R. W. Leigh, P. W. Morse, A. D. Picton, Harland Rees, H. M. Sinclair, O. H. J. M. Telling, E. G. Tuckwell, B. B. Waddy, and A. L. Watson.

University of Cambridge

At recent examinations the following candidates satisfied the examiners:—

THIRD EXAMINATION FOR M.B. & B.CHIR.

Part I. (Surgery, Midwifery and Gynæcology).—G. H. Baines, J. M. Barnes, R. D. I. Beggs, K. E. Bond, A. L. Cochrane, J. O. Collin, C. J. F. Coombs, J. D. Cooper, J. W. Crofton, J. E. A. David, L. C. de R. Epps, J. A. Falk, A. C. Fraser, D. G. Freshwater, C. A. Gibson-Hill, J. F. Goodall, I. C. A. D. P. Graham, E. B. Hacking, A. D. Hodges, L. R. Holt, C. S. Humphries, R. S. Hunt, T. E. Johnson, R. B. Leech, P. H. Lenton, D. G. Levis, O. C. Lloyd, G. E. Loxton, A. M. McFarlan, H. C. Maclaren, C. McNeil, K. M. Mayall, W. A. M. Miller, R. H. B. Mole, A. J. Moon, T. P. Myles, J. C. Newbold, A. M-M. Payne, W. L. Petter, E. H. Platts, S. J. R. Reynolds, K. W. B. Rostron, P. C. Rushton, H. Sirota, G. G. Smith, G. S. Steele-Perkins, R. S. Stevens, W. J. J. Taylor, R. D. Teare, H. A. Wallace, R. A. L. Wenger, P. J. Wenger-Byrne, J. Woodrow, G. F. Wright, M. E. Barnard, and E. P. Gretton-Watson.

Part II. (Physic, Pathology and Pharmacology).—G. H. Baines, G. B. Barbour, J. M. Barnes, F. G. A. Beckett, A. G. Bellamy, R. G. Bickford, A. D. D. Broughton, N. P. Brown, S. C. Buck, H. A. Burt, J. W. Crofton, J. E. A. David, J. Diver, R. C. Droop, J. A. Falk, B. S. C. Gaster, H. G. Goldwater, J. F. Goodall, C. N. Gosse, H. A. Hamilton, M. H. Harding, E. W. Hart, G. R. Hawkes, C. M. Heath, A. D. Hodges, A. L. Jackson, J. E. V. Jones, R. Kauntze, D. D. Keall, J. W. Landells, A. D. Ledward, D. G. Levis, R. G. M. Longridge, A. M. McFarlan, J. Mackellar, F. C. Maddox, E. B. Z. Masterman, H. S. Mellows, J. S. Minett, T. J. Morton, J. C. Newbold, J. W. Parks, W. J. E. Phillips, G. C. L. Pile, J. M. Ranking, S. J. R. Reynolds, O. N. Roussel, H. P. Ruffell Smith, R. S. Saxton, D. R. Seaton, G. C. Smith, R. Solley, R. H. A. Swain, J. F. L. Walley, D. J. Watterson, P. J. Wenger-Byrne, A. M. Weston, E. G. K. Williams, J. R. C. Williams, H. T. H. Wilson, A. Winder, G. F. Wright, E. P. Gretton-Watson, B. J. Travers, and E. M. Wright.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—H. M. Sinclair, Oxf. and Univ. Coll. Hosp.

Medicine.—J. M. Lea, Guy's Hosp.; J. R. Rocyn-Jones, Welsh National School of Medicine; and J. K. Sargentson, Camb. and St. Mary's Hosp.

Forensic Medicine.—J. M. Lea, Guy's Hosp.; J. R. Rocyn-Jones, Welsh National School of Medicine; J. K. Sargentson, Camb. and St. Mary's Hosp.; and C. W. Williams, Welsh National School of Medicine.

Midwifery.—J. S. P. Coutts, St. Mary's and West London Hosp.

H. M. Sinclair, having completed the final examination, is granted the diploma of the society entitling him to practise medicine, surgery, and midwifery.

Coroners' Society of England and Wales

On June 26th Mr. J. A. K. Ferns (East Cheshire) was elected president of the society, Sir Seymour Williams (Lower Gloucester) senior vice-president, and Dr. G. A. Cohen (Eastern Middlesex) junior vice-president.

(*Continued from preceding page*)

WISHART, J. W., M.B. Lond., D.P.M., Assistant Medical Officer at Cheddleton Mental Hospital.

Queen Charlotte's Maternity Hospital, London.—The following appointments are announced:—

WELLS, C. P. B., M.R.C.S. Eng., Senior Resident Medical Officer;

TALBOT, R. R., M.B., Assistant Resident Medical Officer;

SCOTT, OLIVE, M.B. Glasg., Resident Anæsthetist and District Resident Medical Officer; and

SMAIL, MARJORIE, M.R.C.S. Eng., Resident Anæsthetist.

Certifying Surgeons under the Factory and Workshop Acts: Dr. W. F. HUDSON (Banbury District, Oxford); Dr. D. KYLE (Brecon District, Brecknock); Dr. J. H. MARSHALL (Bromyard District, Hereford); Dr. G. H. BROWN (Hoylake District, Cheshire); Dr. F. T. EASBY (Penarth District, Glamorgan).

University of Glasgow

On June 28th the degree of M.D. was conferred on M. MacGregor.

University of Wales

At recent examinations the following candidates were successful:—

PART I.—D.P.H.

D. J. N. McNab, J. B. S. Morgan, W. E. Thomas, and J. T. Watkins.

National University of Ireland

At recent examinations in University College, Cork, the following candidates were successful:—

M.B., B.CH., B.A.O.

Brendan O'Neill, Finbarr Lawton, J. N. Hennessy, Matthew Crowley, W. F. Tierney, and Thomas Creedon (with second-class honours); M. J. Barry, Denis Buckley, T. J. Coffey, Thomas Creedon, Matthew Crowley, Alice M. Glanville, J. N. Hennessy, P. J. Kelleher, Finbarr Lawton, Christina M. Murphy, Florence C. Murphy, Brendan O'Neill, John O'Sullivan, Mary P. Quinlan, T. P. Riordan, G. F. Russell, John Russell, T. F. Shine, W. F. Tierney, and Helena P. Tracy.

D.P.H.

R. G. Cross.

University of Bristol

At a recent meeting of the senate a vote of thanks was passed to Prof. Walker Hall for the valuable work he has done in the last three years in acting as director of the preventive medicine laboratory.

The Beaverbrook fellowship for 1936–37 has been awarded to Dr. F. J. W. Lewis.

University of Leeds

Dr. Archibald Durward has been elected to the chair of anatomy in the university in succession to Prof. J. Kay Jamieson who has resigned.

Dr. Durward took his M.B. degree in 1926 and his M.D. in 1930 at Otago in New Zealand, where he also held the posts of senior demonstrator and acting professor of anatomy. Last year he took up his present post of senior demonstrator of anatomy and curator of the anatomy museum at University College, London. He also lectures on anatomy at the Central London Throat, Nose and Ear Hospital. Dr. Durward has published many papers on cerebral anatomy.

University of St. Andrews

On June 26th the hon. degree of LL.D. was conferred on Prof. E. W. Reid, F.R.S., emeritus professor of physiology at University College, Dundee.

On June 27th the general council of the university approved of the draft ordinance instituting degrees and diplomas in dental surgery. St. Andrews will be the first Scottish university to do this, and it is proposed to carry out the new degree course at the Dental Hospital, Dundee. Four years' study will be required for the diploma (D.D.S.), five years' for the degree of B.D.S., and a further period for the degree of M.D.S.

Royal Society

Prof. Sigmund Freud has been elected a foreign member of the Royal Society.

Inns of Court

On June 24th the following were called to the bar: Dr. G. S. Gardner (Middle Temple) and Dr. K. F. Kitchin (Gray's Inn).

National Association for the Prevention of Tuberculosis

The twenty-second annual conference of this association will be held at the County Hall, London, S.E., from Thursday, July 16th, to Saturday, July 18th. The conference will be inaugurated by Sir Kingsley Wood, and the following discussions and openers have been arranged: significance of the examinations of contacts (Sir Arthur MacNalty, Mr. Frank Kiernan); protection of the adolescent and young adult from tuberculosis (Dr. R. R. Trail); the need for closer coöperation between the tuberculosis service, the maternity and child welfare service, and the educational authorities (Dr. W. T. Munro); and tubercle-free herds—present position and policy (Major Rabagliati). A visit will be paid to Burrow Hill Sanatorium Colony, Frimley. The secretary of the association is Miss F. Strickland, Tavistock House North, Tavistock-square, London, W.C.1.

NOTES, COMMENTS, AND ABSTRACTS

WHAT THEY WORE

HOWEVER much we may admire the simple beauty of the lilies, most of us are also fascinated by tales of the glorious raiment worn by men, women, and children in more spacious days. It is especially with children that Dr. Margaret Jackson is concerned in a charming book, just published, entitled "What They Wore."[1] She admits that she has never really recovered from the strain of having to dress an eighteenth century play with 16 characters for 7*s.* 4*d.*, and this history of children's dress from the Stone Age to the present day should prove a help to many other amateur producers struggling with a large cast and limited resources. The book will serve a more important function if it succeeds in encouraging the modern tendency to dress children simply and sparsely, and holding up to scorn officious parents of the past who, disregarding the principles of comfort and health, piled more and more elaborate clothes on their offspring, wandering far from the sound taste of the Stone Age to which we are happily now returning. In almost every chapter we are staggered by the number of garments considered necessary for small people. The christening robes of a child in the fifteenth century as here described sound more suitable for an alderman than for a baby. And whenever things seemed to be taking a sartorial turn for the better, fashion decreed that houppelands should become the rage or that "large-brimmed hats trimmed with seven or eight ostrich feathers, as long and sweeping as the tail of a peacock, each feather embroidered with jewels along the quill" (p. 81) should be worn. Dr. Jackson does not skim lightly over the surface of her subject but penetrates to the very underwear of the ancients, and in the closely fitting camisia worn by Athenian women describes what is probably the beginning of the modern "foundation garment." She does not ignore the laundry problems of our ancestors, weighing the evidence as to whether in the times of the Normans the "sherte bande" was or was not detachable from the "sherte." Many unfamiliar and beautiful names for colours and garments were apparently used in Plantagenet England; among them pavonalilis, pers, cramoisy, garance, and murrey stand for peacock, blue, crimson, madder, and claret, while the tailored suit and jumper of to-day sound tame beside a gauffered bliaut or a liripipe.

It is interesting to learn that the fashion for fantastic shoes with long stuffed points was introduced by Count Fulk of Anjou to disguise his bunions; that Dick Whittington, who had become a rich mercer, supplied part of the trousseau of Princess Blanche, daughter of Henry IV.; that in olden days a picture of your enemy could be imprinted on the sole of your shoe so that he might be heavily trodden under foot; and that a three-cornered hat was called "Egham, Staines, and Windsor" after a familiar three-way signpost. At the end of the book there is a short history of shoes. Dr. L. N. Jackson comments on each chapter in appropriate verses which are a delight to read, and 25 accurate line illustrations are supplied by Dr. O. H. Lister.

PHYSICIANS AND SURGEONS ALL

A NEW periodical, the *Surgeons Hall Journal*, has recently been published by the School of Medicine of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the first number suggests that this is a vigorous infant destined to thrive. The editor describes it as "a medium which hopes to consolidate the heterogeneous mass of students into one coöperative student body," which sounds a praiseworthy ambition, if tough. Alumni will find the new journal of value in maintaining the friendships formed in Surgeons' Hall. There is a faintly transatlantic atmosphere of bonhomie about it, difficult to analyse, but piquant because it seems at variance with Caledonian austerity. Alumni of the School of Medicine of the Royal Colleges of Edinburgh who wish to subscribe or contribute to the new journal are asked to communicate with the Alumni Editor, *Surgeons Hall Journal*, Surgeons Hall, Nicolson-street, Edinburgh.

[1] London: George Allen and Unwin Ltd. 1936. Pp. 160. 4*s.* 6*d.*

NEW PREPARATIONS

"COLLOSOL" PHOSPHO-MANDELATE.—A condition of successful treatment of chronic urinary infections with mandelic acid is that the urine shall be acid. Ammonium chloride has been chiefly used to ensure this acidity, but the Crookes Laboratories (British Colloids Ltd.), of Park Royal, London, N.10, recommend that ammonium phosphate should be used instead. Its taste is not unpleasant, and they say that it is more effective. Under the name of Phospho-mandelate they supply the salt and the acid in blue and white envelopes with directions for use.

"MAGSYN" MAGNESIUM-SYNERGISED ASPIRIN is described as "a highly active form of aspirin, free from ill-effect on the digestive system." In putting it on the market Messrs. Allen and Hanburys Ltd. (Bethnal Green, E.2) claim that admixture with magnesium not only amplifies the analgesic action of the aspirin but prevents the gastric disturbance to which this drug may otherwise give rise. Hence Magsyn "is easily tolerated by persons to whom ordinary aspirin is unacceptable."

PROSEPTAZINE and SOLUSEPTAZINE.—These two products, made by Pharmaceutical Specialities (May and Baker) Ltd., of Dagenham, are intended for use against streptococcal infection. The manufacturers' experiments on mice suggested that the simple sulphonamides are less toxic than compounds of the azo group and also provide better protection against streptococci. Proseptazine, which is given by mouth in 0·5 gramme tablets, is benzyl-amino-benzene-sulphonamide; while Soluseptazine, which is put up in 5 c.cm. ampoules of a 5 per cent. solution for injection, is *p*-amino-benzene-sulphonamide-sodium-formaldehyde-bisulphite. We understand that supplies of both substances have been sent to hospitals for trial.

FORTAMIN is a "tonic" containing concentrated bitters derived from plants by a process devised by Prof. W. Wiechowski of Prague. It is compounded according to the following formula: vegetable bitters, 5·9 g.; sodium glycerophosphate, 1·75 g.; sugar, 35 g.; rectified spirit, 13·2 g.; glycerin, 5·7 g.; and water to 175 c.cm. The bitters do not include strychnine and the preparation is described as "absolutely harmless." It is said to have an indirectly stimulating effect upon the vegetative nervous system and upon smooth muscle, and is recommended for conditions of general debility, and for functional disorders including anorexia. The makers are Schering Ltd., 188, High Holborn, London, W.C.1.

• THEVETIN is a cardiac glucoside prepared from the nuts of *Thevetia neriifolia*. It is soluble in water and stable to heat; a dilute solution is said to retain its potency for more than a year. It has an action on the myocardium closely resembling that of ouabain, and differs from digitalis in the promptness of its action. It is standardised in cat units, and proves to be about one-eighth as toxic and one-eighth as potent as ouabain. The drug is administered intravenously and has been shown to have a maximum effect on the pulse-rate in less than 45 mins. in 60 per cent. of cases. In a clinical investigation, Arnold, Middleton, and Chen (Amer. Jour. Med. Sci., 1935, clxxxix., 193) found that thevetin produced slowing of the apical rate, the pulse deficit in auricular

fibrillation being materially reduced, and a fall in venous pressure. Electrocardiograms showed a lengthened auriculo-ventricular conduction time and vagal stimulation. There was an early diuresis and dyspnœa was relieved. Animal experiments showed that 82 per cent. of a fatal dose was eliminated within 24 hours. The drug is recommended for patients intolerant of, or not reacting to, digitalis; for hyperthyroid fibrillation or tachycardia; and as a substitute for any cardiac glucoside that needs injection. It is produced in 2 c.cm. ampoules containing the standard dose of 3 cat units, by Eli Lilly and Co. of Indianapolis, U.S.A. (2, Dean-street, London, W.1).

SCHOOL AND COLLEGE MANAGEMENT

A MONTHLY magazine devoted to the administrative problems connected with the running of schools should be of service to many. The first number of *School and College Management*, published in May at 1*s.*, contains some 18 articles dealing with various aspects of this large subject. The all-important financial aspect is discussed in an article on investment policy by the Bursar of Caius, and in another by Messrs. R. J. E. Silvey and M. A. Abrams, who write on the birth-rate, incomes, and schools. Food is considered in three articles: Prof. V. H. Mottram puts the case for the dietitian, Mr. Charles E. Hecht writes on food habits, and Mrs. Mary M. Jeffreys supplies some specimen menus. School architecture receives much attention. Messrs. S. W. Davis and K. M. B. Cross write on the planning of swimming pools, and Mr. Peter Bicknell on the new tuck-shop at Oundle. There is also an article on the administration of preparatory schools.

On the purely medical side there are two articles of note; one by Dr. G. E. Friend on the application of statistics to school medicine and the other by Dr. R. E. Smith on planning a sanatorium. A service bureau has been established and readers are urged to make the fullest possible use of it.

THE MUSCLES OF THE BODY

AN excellent little pocket book on the muscular system, now in its third edition,[1] will continue to be a boon to students. Within small compass an account is given of all the muscles in the body, including their nerve-supply and actions. An introduction supplies a simple description of the physiological basis of the muscular system, and an appendix gives useful test movements for localising nerve lesions. The anatomical illustrations of muscles and of the cutaneous areas of peripheral nerves are adequate. The muscle action is not always sufficiently detailed. For example, the actions of the obliquus abdominalis, externus and internus, are given as "similar," including rotation, though they rotate to opposite sides. But such omissions are rare, and the application of a little common sense makes them unimportant. The matter as a whole is well arranged and contains all the essentials.

[1] The Muscular System. By Harold Burrows, C.B.E., M.B., B.S., F.R.C.S. London: Faber and Faber Ltd. 1936. Pp. 184. 2*s.*

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, July 7th.—5 P.M. Annual Meeting of the Society.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY, July 6th.—2.15 P.M., Dr. Duncan White: Radiological Demonstration. 3.30 P.M., Mr. L. Carnac Rivett: Inflammatory Diseases of Tubes and Ovaries.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2.30 P.M., clinical and pathological conference (surgical).
THURSDAY.—2 P.M., operative obstetrics. 3.30 P.M., Mr. V. B. Green-Armytage: Gynæcology and Midwifery in the Tropics.
FRIDAY.—2.15 P.M., Dr. A. A. Davis: Gynæcological Pathology.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics or operations, obstetrical and gynæcological clinics or operations, and refresher course.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, July 6th, to SUNDAY, July 12th.—BROMPTON HOSPITAL, S.W. M.R.C.P. course in chest diseases (twice weekly at 5 P.M.).—ST. MARK'S HOSPITAL, City-road, E.C. All-day course in proctology.—CITY OF LONDON HOSPITAL, Victoria Park, E. Sat. and Sun., course in diseases of the heart and lungs.—WEST END HOSPITAL FOR NERVOUS DISEASES, In-patient Department, Gloucester-gate, N.W. Tues., 8.30 P.M., Mr. R. Lindsay Rea: Fundus Oculi.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY, July 8th.—4 P.M. (St. James' Hospital, Balham, W.), Mr. V. Z. Cope: Demonstration of Surgical Cases.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY, July 8th.—2 P.M., Dr. Bertram Shires: Diagnostic Value of Barium Meals and Enemata. 3 P.M., Dr. W. W. Payne: Diabetes: Cause and Diagnosis.
Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland-street, W.
WEDNESDAY, July 8th.—5 P.M. (1, Wimpole-street, W.) Dr. Parsons-Smith: Cardiac Failure. (St. Cyres lect.)

UNIVERSITY OF BIRMINGHAM.
TUESDAY, July 7th.—3.30 P.M. (General Hospital), Mr. C. A. Ralson: Swellings of the Breast and their Diagnosis and Treatment.

Births, Marriages, and Deaths

BIRTHS

BURROWS.—On June 20th, at St. Helens, the wife of Dr. W. R. Burrows, of a son.
COLLINS.—On June 22nd, at Farnborough, the wife of Major J. C. Collins, R.A.M.C., of a daughter.
GAISFORD.—On June 24th, to Mary, wife of Wilfrid F. Gaisford, M.D., M.R.C.P., of 72, Russell-road, Moseley, Birmingham—twin daughters.
HERBERT.—On June 23rd, at Elizabeth Garrett Anderson Hospital, to Dr. Joyce Herbert (née Clogg), wife of Dr. W. E. Herbert, Sutton—a daughter.
MACKENZIE.—On June 23rd, the wife of Dr. Ernest H. Mackenzie, Sutton, Surrey, of a son.
MICHAEL.—On June 22nd, to Dr. Janet Michael, M.R.C.P. (née Young), and Dr. S. Michael, Croydon—a son.
MUCKLOW.—On June 20th, at Prestbury, Glos, the wife of Dr. S. L. Mucklow, of a daughter.

MARRIAGES

BELLINGHAM SMITH—KENNY.—On June 20th, at St. Joan of Arc's Church, Farnham, Eric Bellingham Smith, M.D., F.R.C.P., to Dorothy Kenny, daughter of the late William Charles Kenny of Southampton.
DAVIE—TRUSCOTT.—On June 20th, at Hendon Parish Church, Thomas Maitland Davie, B.M., B.Ch. Oxon., to Nancy Muriel, youngest daughter of Prof. and Mrs. S. J. Truscott of Hampstead.
EDEN—JONES.—On June 27th, at St. George's, Hanover-square, Kenneth Christie Eden, M.B., F.R.C.S., to Margaret Avis (Betty), eldest daughter of Mr. and Mrs. Harold Jones, Alvanley-court, N.W.
MACNAUGHTON-JONES—PATRICK.—On June 18th, at Holy Trinity Church, Hampstead, Henry Macnaughton-Jones, M.B., B.Ch., B.A.O., to Florence Mary Patrick, of Egton Bridge, Yorkshire.
MEIKLE—DORMAN.—On June 13th, at All Souls', Langham-place, Dr. Gilbert Meikle, Jun., to Sydney, daughter of Lt.-Col. and Mrs. Dorman of Bexhill.

DEATHS

BAIN.—On June 22nd, at Cambridge, suddenly, William Bain, M.D. Durh., F.R.C.P. Lond., formerly of Harrogate.
GIPPS.—On June 25th, Alexander George Pemberton Gipps, D.S.O., F.R.C.S. Edin., Lt.-Col., R.A.M.C. (retd.), formerly Fleet Surgeon, Royal Navy, aged 81.
MARTLAND.—On June 25th, at Bournemouth, Thomas Martland, M.R.C.S. Eng., formerly of Walsall.
MORRIS.—On June 20th, Edward James McCarthy Morris, F.R.C.S. Edin., of Poynders-road, S.W.
NELSON.—On June 24th, at St. Bartholomew's Hospital, Henry Philbrick Nelson, M.D. Camb., F.R.C.S. Eng., aged 34.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths